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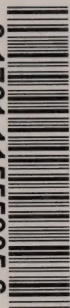
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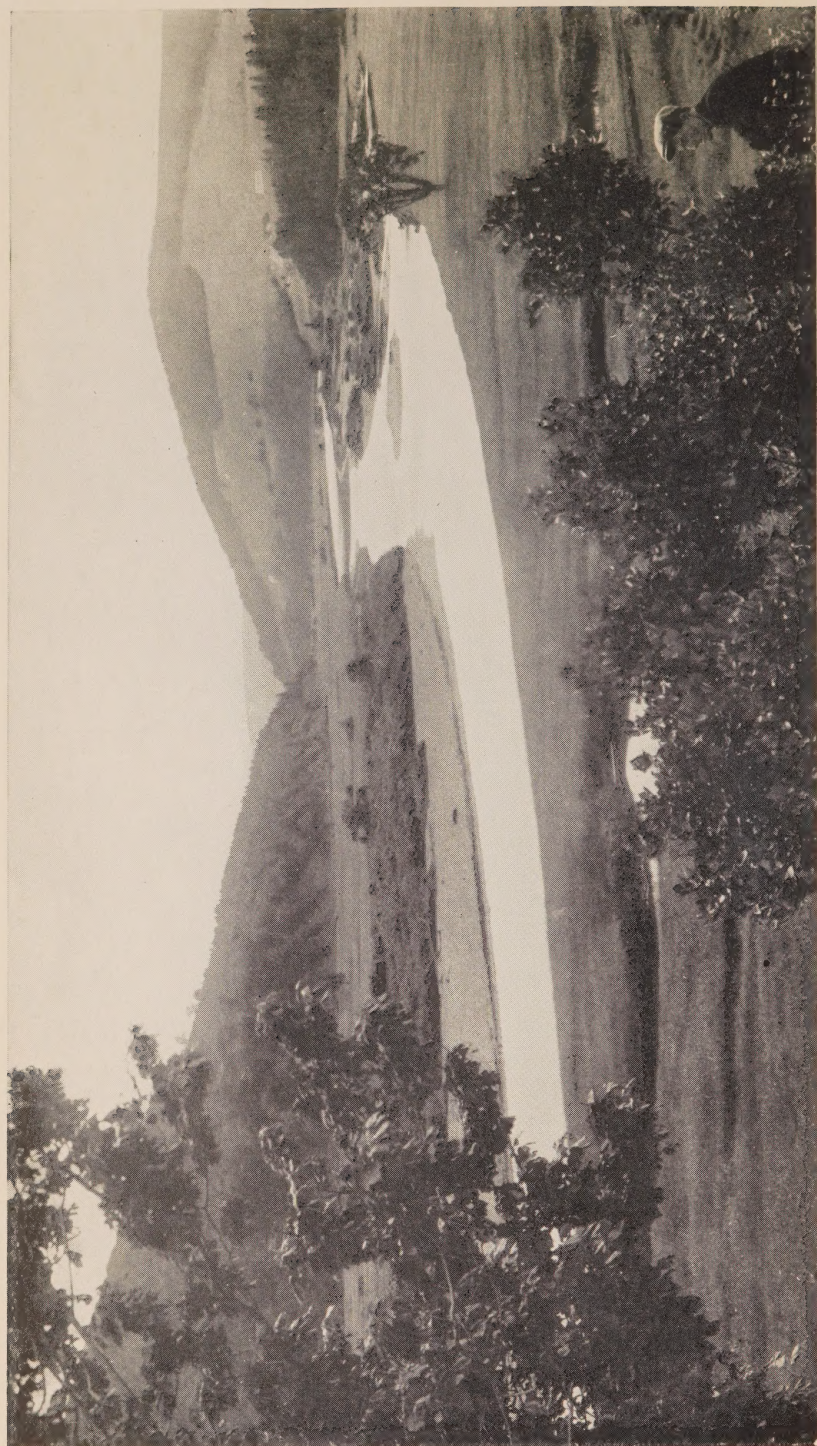
External Development Bureau

The Province of

NOVA SCOTIA CANADA

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The Forks of the Margaree River, Inverness County

Canada National Development Bureau

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THE PROVINCE OF

NOVA SCOTIA

CANADA

Resources and Development

BY

H. S. PHILPOT, M.A.

(Fourth Edition, 1930)

DEPARTMENT OF THE INTERIOR

OTTAWA, CANADA

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PREFACE

THE facts in this booklet are compiled for the use of the home-seeker, merchant, manufacturer, capitalist, and visitor. They purpose to be up-to-date, authoritative, concise.

The Dominion Government fathers all nine provinces alike and all nationalities therein that owe allegiance to the Crown. Its interests are those of that member of the Imperial Body named Canada, and herein are set down the special claims to consideration of that member of the Dominion named Nova Scotia.

When a man with the world before him is choosing a place to visit, or in which to work, to invest, or settle, there are definite facts that he will wish to know. In this booklet we state such facts, each of which will interest one reader if not another. His final choice may result from a cool balancing of the answers to a series of questions running in his mind, but his peculiar temperament or past experience may magnify the importance of some facts or cause him to look through the wrong end of the field glasses at others. Thus a man in search of sunshine may make for a country where for nine months of the year all is dust, which he will be glad to exchange before long for a land of mildew: the sight of a nugget may take a man to a Yukon, but a chance illustration of apple-picking may move him to Nova Scotia.

When a reader's interest is aroused, his plan of action may be simplified by getting in touch with the

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NOVA SCOTIA



HISTORICAL OUTLINE

IT is now 432 years since the little ship *Matthew*, "sometimes stayed" on her course by schools of cod, carried John Cabot to hoist the Royal Standard on Cape Breton island. The attempted settlement of Nova Scotia itself was the only Scottish colonial enterprise undertaken by a purely Scottish King, for the canny James VI, before leaving Edinburgh to be crowned as James I of England, was already turning the claims of Henry VII into cash and selling "Baronetcies of Nova Scotia" to such as would buy real estate in "Acadia" from his factor, Sir W. Alexander. Few British settlers, however, came, and for the next century the land was French. It was not till the foundation of Halifax in 1749, after the Peace of Aix-la-Chapelle had restored Louisburg to the French, that the British stock took firm root.

The final surrender of Louisburg to Admiral Boscawen ("Old Dreadnought") and Wolfe marked the end of the French regime. Louisburg—the mighty fortress forming the first link of the chain that France in the 18th century was stretching to hem in the British from the Atlantic to the gulf of Mexico—is now the winter port of the Dominion Steel and Coal Corporation. Halifax, planted as its rival, remains the gateway to Canada and a base of the Imperial navy in the North Atlantic.

On the east coast of Cape Breton island, where the younger Cabot landed in 1498, the seams of coal, described for early voyagers as threading the cliffs and worked with crowbars for French and British cargoes, were the outcrop of what has proved to be the great and only coal field on the Atlantic seaboard of North and South America. At the opposite end of the province lies "Acadia," a name identified by romance with the "Grand Pré"—once the only space left clear by nature in the forest that spread unbroken from Cape Breton to the undiscovered prairies. Here is Annapolis Royal, the capital of Nova Scotia till

1750, the oldest European settlement north of Florida and cradle of agriculture, milling and Christianity in Canada. For a century, from its foundation as Port Royal after the visit of Champlain in 1604, it had a record of attack, capture and recapture, until finally taken by the New Englanders and renamed for Queen Anne in 1710.



Haliburton House, Windsor, N.S.

"I don't know what more you'd ask: almost an island, indented everywhere with harbours, surrounded with fisheries—the key of the St. Lawrence, the Bay of Fundy, and the West Indies; prime land above, one vast mineral bed beneath, and a climate over all temperate, pleasant and healthy. If that ain't enough for one place, its a pity—that's all."

—*Sam Slick of Slickville (Haliburton).*

Picture, then, Nova Scotia, including Cape Breton island, as one long peninsula, 386 miles in length by 50 to 100 miles in width, enriched with black diamonds on the east, and with gold medal apples on the west; a peninsula fringed by waters teeming with fish, with a southerly coast of land-locked harbours inviting trade with the West Indies, Latin America, Africa and Europe; and, passing through the twelve-mile-wide isthmus of Chignecto, trans-continental trains carrying travellers, freight and mails to and fro for 3,000 miles between Halifax and Pacific ports.

The mail question is near to the heart of a Nova Scotian, for was it not Samuel Cunard, Halifax merchant, trader between Newfoundland, Boston and Bermuda, who first evolved the plan of an Atlantic steam-mail service, and who with Burns and McIver formed the Cunard Company and sent the *Britannia* paddling across in 1840? Delivery of Dominion mail by airplane already supplements train service. Nova Scotia, with a balance of 558 miles in its favour over New York, is a logical landing-place for the bags.

"Two hundred years ago," said the Bulletin of the American Geographical Society in 1914, "Nova Scotia was nearly, if not quite, as promising a colony as Massachusetts. Its position was even more strategic. Its climate was as good and its resources were superior. Massachusetts has no equal area of farming as fertile as the Annapolis Valley. It has a longer coastline, fringed with harbours In 1787 Hollingsworth writes, "This country may be justly esteemed the first in the American world with respect to that situation, whether in peace or in war, which a great maritime power would wish to retain and improve." "If a vigorous climate," continues the Bulletin "thin soil, Atlantic waterfront, many harbours, and North European stock account for the phenomenal development of New England, why have these same factors not led to similar results in Nova Scotia, and still more, since the latter has coal and the former has none?" The contrast is ascribed to "geographical conditions by which Nova Scotia has long been isolated from the real centres of Canadian activity, and politically cut off from its natural neighbour New England. Nova Scotia has had to wait until Canada developed, but a new spirit of optimism is taking root in the province, and geographical conditions, which under a past regime has retarded her growth, are now likely gradually to reverse their influence." (*Colby. Economic Geography of N. America, 1924, p. 64-71.*)

ORIGIN OF THE POPULATION

The population for 1929 was 550,400. Of the 523,837 in the census of 1921, 95·5 per cent were born under the British flag; 77·83 are of British descent and 10·82 of French descent. Below is a list of the races inhabiting the

province whose numbers are separately more than .20 per cent of the total population.

English.....	202,106	Negroes.....	6,175
Scotch.....	148,000	Hebrew.....	2,161
Irish.....	55,712	Indian.....	2,048
Welsh.....	1,800	Italian.....	1,620
French.....	56,169	Austrian and Swiss..	1,515
German.....	27,046	Scandinavian.....	1,324
Belgians and Dutch..	12,347	Syrian.....	1,140
		Other races.....	4,224

The 77·83 percentage of British stock in Nova Scotia is higher than that in any other province except Prince Edward Island, where it is 85·34 per cent. The population listed in the census reports as of German origin has long ago ceased to form a racial group such as British and French.

The French were the first to get a footing, mainly in Acadia. Here the salt marshes, needing no clearing, were especially attractive to the men from the mouth of the Loire, whose fathers had reclaimed and dyked such lands for generations. In Acadia and Cape Breton there were no large seigneuries as along the St. Lawrence, but just communities of peasants or fishermen. In the middle of the seventeenth century Louis XIV granted Cape Breton island to one Nicholas Denys, who has left us an account of the early fishing stations, their methods of curing fish, and the outcropping of coal. When, after the treaty of Utrecht (1713), Louisburg was fortified to guard the mouth of the St. Lawrence and protect the fishing fleet, the French population of Cape Breton rapidly grew.

The first body of British to settle in Nova Scotia were the 2,500 disbanded soldiers who, on June 21, 1749, sailed in to clear the forest round Chebucto bay for the site of Halifax, to which city the capital was then moved from Annapolis. Soon after came 2,000 Hanoverians, who founded Lunenburg and were reinforced by others at the close of the Seven Years' War in 1763. A little later 200 Highlanders were brought to Pictou harbour—the first wave of the 25,000 who before 1828 settled in Cape Breton island and in Pictou and Colchester counties; for after 1745 the Highland clansmen were the unemployed, and sought fresh fields for action. When once across the sea

the dormant industrial quality awoke and, stiffened by the fighting instinct, put many of their descendants in the front rank of commercial and political enterprise.

At the close of the American Revolutionary War Nova Scotia welcomed the third great influx of population in 28,000 of the United Empire Loyalists, 3,000 of whom



Memorial Chapel Grand Pré, Salt Marshes, and Cape Blomidon

founded Sydney, while another 10,000 settled at Shelburne and other places, mainly in Digby county, the rest moving westward to New Brunswick and Quebec.

The number of British settlers was increased after the Napoleonic wars by grants of 100 to 10,000 acres of land to the disbanded soldiers and sailors of the King. To-day the grandsons of these grantees fill many of the most important positions in the Dominion. This Anglo-Celtic stock supplied in 1758 the twenty-two members of the first representative government in the Empire overseas and the Council of Twelve that ruled Nova Scotia until overthrown by Joseph Howe in the interests of a wider democracy. Joseph Howe, orator and statesman, is an outstanding figure in Nova Scotia history. It was said by Lord Grey that the British Empire owed her stability to his foresight, and that the book containing his speeches and writings

ought to be found on a shelf in every portion of the British Empire. Nova Scotia also claims among her sons Sir Charles Tupper, one of the "Fathers of Confederation," and three out of the eleven Prime Ministers of Canada, including Sir Robert Borden, who was the first Canadian minister to sit in the Imperial Cabinet and was the Dominion representative at the Peace Conference of 1919.



Martello Tower, Point Pleasant Park, Halifax

GOVERNMENT

Nova Scotia became part of the Dominion of Canada under the British North America Act of 1867. Its government is vested in:—

- (1) A Lieutenant-Governor, appointed by the Governor-General in Council, *i.e.*, on the advice of the Cabinet at Ottawa.
- (2) A Legislative Assembly, elected by forty-three constituencies.
- (3) An Executive Council of 12 (1930) ministers, with or without portfolios, named by the provincial Premier representing the majority in the Assembly.

Each of the eighteen counties has two members of the Legislative Assembly; there are three additional members for Halifax county, two for Cape Breton, and one each for Pictou and Cumberland.

The province is represented at Ottawa by ten senators and fourteen members of the House of Commons.

Nova Scotia, as the other provinces, receives an annual subsidy from the Dominion Government. This amounted to \$661,841 in 1928, including the grant of 80 cents per head of the population. As recommended by the Duncan Commission a special grant of \$875,000 was allowed pending final legislation.

Under the federal Act of May 24, 1918, it is enacted that every female person shall be entitled to vote at a Dominion election who

- (1) Is a British Subject;
- (2) Is of the full age of 21 years;
- (3) Possesses the qualifications which would entitle a male person to vote at a Dominion election within the province.

Under the Nova Scotia Elections Act and amendments thereto a female person is entitled to vote at an election for the Legislative Assembly.

The proportion of females to males in 1921 was 49·13 to 50·87.

The voting population in 1921 (exclusive of Indians) was 145,231 male and 138,890 female. Of the males 6·72 per cent could neither read nor write, of the females 5·66 per cent.

RELIGION

The 523,837 inhabitants, by the census of 1921, are divided according to their religious beliefs in these proportions:—

Roman Catholic (French and Scotch).....	30·6 per cent
Presbyterian.....	20·9 “
Baptist.....	16·5 “
Anglican.....	16·3 “
Methodist.....	11·2 “
Various.....	4·5 “

Under the British North America Act of 1867, which since Confederation has regulated the relations between the federal and provincial Governments, freedom in religious matters is guaranteed to all.

Under the powers given in section 93 of the above Act each province has passed regulations concerning religious or devotional exercises at the opening and closing of school. As a rule, except in the case of Roman Catholic segregated schools, denominational teaching is excluded, but there is generally provision for instruction in the principles of christian morality. In every province the school law contains a "conscience clause," permitting the withdrawal of the pupil by the parent or guardian for the period of religious instruction. In Nova Scotia the question of devotional exercises is left to the local board of school trustees.

EDUCATION

Within the last fifty years education in Nova Scotia has been revolutionized. In 1863 it is said that less than half of the children between 5 and 16 could read or write. Sir Charles Tupper, in spite of fierce opposition, forced through the Assembly the Free School Act of 1864, which is the basis of the present system.

Education in Nova Scotia is compulsory for all children between 6 and 16 in cities and towns and between 7 and 14 in rural districts. About 21 per cent of the population is enrolled in the public schools.

The superintendent of education is also secretary of a Council of Public Instruction which consists of the members of the Executive Council. Educational grants to fully meet the recommendations of the council are therefore ensured.

The system of education is a 12-year public school course, of which the first 8 grades are known as the "Common School," and the remaining 4 as "High School." By law, a high school department or departments may be established in any section, whether urban or rural.

Graduation at the close of the 12-grade course qualifies for entrance at the universities and various technical or

vocational colleges. There are ten degree-conferring bodies in the province:—

	Students (1929)
Dalhousie University, founded in 1818, Halifax.....	809
Kings College, founded in 1791, Halifax, Anglican.....	80
Acadia Univeristy, founded in 1839, Wolfville, Baptist....	470
St. Francis Xavier, founded in 1866, Antigonish, Roman Catholic.....	330
Nova Scotia College of Agriculture, Truro.....	119
Nova Scotia Technical College, Halifax.....	73
Holy Heart Seminary, Halifax.....	62
Ste. Anne College, Church Point.....	145
Pine Hill Divinity Hall, Halifax.....	26
St. Mary's College, Halifax, Roman Catholic.....	70
Mount St. Vincent College, Rockingham, Halifax.....	135

(Kings College removed from Windsor, Hants, in 1923, and became part of Dalhousie University.)



Parliament Buildings, Halifax, opened in 1918

The three universities take turns in the privileges of the Cecil Rhodes Bequest, under which a scholarship of \$2,250 a year for a three-years' course at Oxford University is periodically assigned for competition.

The training of teachers is the special function of the provincial Normal College at Truro, which is in close touch with the provincial College of Agriculture. About 350 teachers are in training during each school year. There

are four classes of teachers, of which the highest grade, named "Academic," implies graduation from a university of recognized standing and normal training. The average salaries for each class in 1927 were:—

Male.—Academic, \$ 2,072; A, \$1,357; B, \$1,175; C, \$698; D, \$669.

Female.—Academic, \$1,552; A, \$816; B, \$708; C, \$626; D, \$531.

In 1927 the issuance of the third class (D) licence was abolished. Also in 1927 teacher training courses were instituted in each of the three Nova Scotian universities. The successful completion of these courses has equal rank with the successful completion of the courses at the provincial Normal College, Truro. The Department of Education now conducts two summer schools, one at Halifax and one at Truro, the attendance of teachers at the Halifax school being about 400 and at the Truro school about 250. There are also correspondence courses for teachers and correspondence courses in the subjects of the elementary grades for children living in isolated communities where there are no public school privileges. There is also a department of radio instruction and visual education. Special grants also are given for the encouragement of special classes in the manual training branches and in art and music.

By the Teachers' Pension Act of 1930, five years credit is allowed to teachers who have taught in public schools of the British Empire or have been employed as instructors in universities of the Empire or in Nova Scotia.

Technical Education.—There are widespread provisions for technical education both of university grade and of secondary nature. The system of vocational training was established by the provincial legislature in 1907.

The Technical College at Halifax serves as the administrative centre and also as the institute where the most advanced work is offered. It is affiliated with five other colleges in Nova Scotia and Mount Allison University in New Brunswick in providing courses of instruction in engineering. The first two years may be taken in any one of these six colleges and the professional work of the last two years at the Technical College where the degree of

Bachelor of Science is conferred on successful candidates. Courses are offered in civil, electrical, mechanical, and mining engineering. The tuition fee at the Technical College has been deliberately kept at the low level of \$75 per year in order to provide a wide opportunity to young men from families of modest means and a scholarship is provided each year for each of the eighteen counties in the province.



The Technical College, Halifax, opened in 1907

In addition to work of a university grade the college also offers a series of short courses for the first three calendar months of each year in special technical subjects. These are specially designed for men who have had several years of practical experience in industry and wish to secure technical instruction which will fit them for advanced positions as technicians, experts, service men, or foremen. The tuition fee for the whole three months is only \$15 and the requirements for entrance are simply that the student has passed the eighth grade of the public school and has had definite practical experience in industry allied to the subject which he wishes to pursue.

Evening technical classes are maintained in thirteen of the industrial towns and cities of the province. These

are in session from October to April, and offer instruction in forty different subjects covering a wide range of general, industrial, commercial, homemaking, and technical courses. In 1929, there was a registration of over 2,000 students in these classes.

In every coal-mining community there are provided evening classes in subjects which provide the students with the knowledge necessary to secure government certificates of competency, of different kinds, required for responsible positions in the collieries. Preparatory classes are also offered for those whose general education has been restricted. Over 700 ambitious coal miners attended these schools during 1929.

The instruction in all these evening classes is practically free. Each student is required to pay a deposit of \$3 at the opening of the session, but a part or the whole is refunded at the end on the basis of his attendance.

In addition to the opportunities for technical education in cities and towns, the Technical College provides a whole series of courses by correspondence for those who live in villages or remote settlements and for those who wish instruction that is not offered in evening schools. These cover a wide range of over 100 subjects and include courses in general education, college matriculation, industry, business, and household arts. The prices for each course are below actual cost and vary from \$3 to \$15. The whole common and high school curriculum from grade I to grade XII is given by mail so that if a boy or girl happens to live where there is no public or high school they can become educated at home. In 1929 over 750 students were taking one or more correspondence courses.

Nova Scotia College of Art is situated on Argyle street, Halifax, and is subsidized by the Government. It offers thorough instruction in the leading branches of industrial and commercial art. The tuition fees are low and there are a number of generous scholarships for talented students. Instruction is offered on a full-time, part-time, or evening attendance basis. Diplomas and certificates are awarded to successful students attesting to their proficiency.

Halifax Navigation School.—This school is maintained by the Dominion Government and is now situated at 574 Barrington street, Halifax. It offers instruction to sea-

faring men preparing for mates and masters of vessels varying in importance from tug-boats to transatlantic liners. Tuition, text-books, and apparatus are provided free of cost. There is a similar school at Yarmouth.

Cadets.—Companies of militia cadets are connected with the various schools and have an enrolment of several thousands.

Women's Institutes.—The Women's Institute of Nova Scotia is an educational and community organization, fostered by the provincial Government under the Department of Agriculture.

Extension work in home economics subjects is carried on throughout the Province by means of lectures, demonstrations, and short courses in household subjects; canning, cooking, nutrition, dressmaking, have been featured in this connection.

The institutes are actively interested in the schools in their districts and have contributed materially to school improvement, such as sanitation, improved equipment, establishing libraries, school lunches, improvement of buildings and grounds and aiming to arouse public interest and create a spirit of co-operation between teachers and community.

Institutes have done a great deal of community work, child welfare, public health, hospital work, charitable work.

A special study is being made of the home industries of the province, and the manufacture and sale of handicrafts is being encouraged.

To date there are 105 institutes with a membership of 2,778.

Aid to Children.—An Act of 1917 established a court for juvenile delinquents, with a special superintendent for neglected or delinquent children, provided for the formation of Children's Aid societies, and regulated the employment of the young.

Public Health Work.—Specially trained nurses are occupied in general public health work in the various counties. All the schools are visited, and nearly 60,000 children are examined for possible defects.

Under the public school dental clinic system, maintained also at New Glasgow and Sydney, some 2,000 Halifax children who cannot afford private dental service receive

yearly free dental treatment in the Forrest building of Dalhousie University. An X-ray service is also given to all who need this attention.

CLIMATE AND HEALTH

Under the influence of the Gulf Stream, which runs northeasterly and parallel to the coast of Nova Scotia till it meets the Arctic current flowing south, the climate of the province is tempered. The minimum temperature on record for Halifax is -17° and the maximum, 98.7° , and for Yarmouth -12° and 86° . Apart from the Gulf Stream, the presence of the ocean affects the southern coast much as the climate of Toronto is affected by the presence of lake Ontario. The mean winter climate registered at Toronto and Halifax was identical in 1916 (27.8°) and 21° higher than at Winnipeg. The summer mean at Halifax was 62.6° , as compared with 69.4° at Toronto and 65.1° at Winnipeg.

These climatic conditions of the seaboard are of vital interest to Canada, for they supply her with a line of harbours open all the year round from Cape Breton to the head of the bay of Fundy.

The records of the world's average yearly precipitation run from 458 inches in Assam (905 in 1861) to 2 inches at Port Said, but for useful comparison we may take London, Edinburgh and European capitals in general which show a fall of from 20-30 inches. In a country, where, during the growing season the sun is powerful, and which depends agriculturally so much on pasturage, fruit and general farming, an abundance of rain is important, in the absence of irrigation.

ANNUAL PRECIPITATION IN NOVA SCOTIA (1922 TO 1926)

Yarmouth.....	43.02 inches—snowfall	52.62 inches
Halifax.....	52.14 “ “	61.45 “
Sydney.....	51.97 “ “	76.08 “

The average annual precipitation for 40 years (1885-1924) was 47.38 , of snow 75.3 inches (ten inches of snow equal to one inch of rain). Hours of sunshine in a period of years average 1,888 at Wolfville and 1,864 at Yarmouth.

In 1929 the precipitation at Truro was 39.09 inches, the maximum temperature 84° , minimum -4° (December).

Where snow lies for months continuously, the more there is, the better for transport and agriculture in season. The cold Canadian winter with its proper appliances for heating, furs, sleighs, skis, snowshoes, and skates has earned more praise than blame, and is balanced by the abundance of sunshine, a "fall" of surpassing crispness and colour, and a summer perfect in its ripening power.

HEALTH

The death-rate for Nova Scotia was 11·7 per 1,000 in 1927 compared with 13·1 in 1923. The death-rate of infants in 1927 was 92·5 per 1,000 living births compared with 116·5 in 1920.

The birth-rate in 1927 was 20·4 per 1,000 of population compared with 22·0 in 1923.

In 1921 the census credited Nova Scotia with one-fifth of Canada's 183 centenarians and a percentage of those above 90 years two and a half higher than in the rest of Canada.

The Nova Scotian physique needs no comment. On sea and land and in the air during the Great War the world had a moving picture of the type of men this province contributes to the Empire.

POPULATION

(Census of 1921)

The total population on June 1, 1921, was 523,837, an increase of 6·4 per cent over that of 1911. For all Canada in the same period the increase was 21·95 per cent and the total 8,788,483. For 1929 the estimate is 550,400, an increase of 5 per cent in the last 8 years.

The area of Nova Scotia is 21,428 square miles and the density of population is now 25·6 to the square mile.

As in the other provinces excepting British Columbia and Manitoba there was an increase of the urban over the rural population in the decade, viz., 43·02 per cent urban and 56·98 rural in 1921, as compared with 38·33 urban and 61·67 rural in 1911.

The cities and towns that showed an increase of more than 1,000 in their population since 1911 were:—

	Population	Increase
Halifax.....	58,372	11,753
Sydney.....	22,545	4,822
Dartmouth.....	7,899	5,058
New Glasgow.....	8,974	2,591
Truro.....	7,562	6,107
Stellarton.....	5,312	1,402
North Sydney.....	6,585	1,167
Sydney Mines.....	8,327	1,095
Amherst.....	9,998	1,025

The counties that showed a decrease in population were Antigonish, Guysboro, Queens, Richmond, Shelburne, Victoria, Yarmouth.



The "Bluenose" in International Schooner Race

In 1921, of the 506,824 Canadians born in Nova Scotia 56·66 per cent were living west of Ontario, compared with 61·16 per cent in 1911.

Indians.—The Nova Scotia Indians are Micmacs of the Algonquin stock. Most of them are farmers in a small way, raising hay, potatoes and vegetables, horses and cattle, but no sheep and few pigs. Many work as day labourers, others make baskets, moccasins, and hockey sticks; others find employment in fishing, lumbering, hunting and trapping, and as guides for sportsmen.

In 1928-29 the nineteen Indian agencies in Nova Scotia had an aggregate population of 1,827, of whom 1,818 were Roman Catholic.

There are 11 day schools on the Indian reserve. A residential school to be conducted under Roman Catholic auspices has been erected by the Dominion Government to accommodate 125 Indian children at Shubenacadie.

The acreage of the reserves is 21,289, valued at \$98,275; of this acreage 1,898 acres are fenced but only 911 are cultivated for hay, grain, roots, etc.

The total value of the Indian real and personal property is \$275,100. The income from all sources other than a Dominion grant of \$82,840 was \$112,247, or \$61.50 per head.

ESTIMATE OF MAJOR PRIMARY PRODUCTION IN 1929

Minerals—	Value
Coal.....	\$ 28,071,956
Gold.....	55,545
Gypsum.....	1,152,160
Diatomite.....	5,080
Salt.....	157,662
Quartz.....	31,388
Silica.....	93,207
Clay products.....	653,157
Lime, sand, etc.....	681,777
Other products.....	2,521
Total.....	\$ 30,904,453
Field crops.....	20,945,000
Fruits and vegetables.....	3,628,000
Creamery butter and cheese.....	1,780,841
Furs, 1928-29.....	442,096
Lumber, lath and shingles, 1928.....	2,623,319
Wood pulp.....	948,889
Fisheries.....	11,455,491

As the intangible value of scenery and climate is a permanent provincial resource, the revenue from the tourist trade estimated at \$8,000,000 in 1929 should not be omitted.

WEALTH OF NOVA SCOTIA, 1927

(Published in 1930 by Dominion Bureau of Statistics)

CLASSIFICATION OF WEALTH

Farm values (land, buildings, implements, machinery, live stock).....	\$131,646,000
Agricultural production in possession of farmers and traders.....	39,138,000
Total agricultural wealth.....	\$170,784,000
Mines (capital employed).....	70,934,000
Forests (estimated value of accessible raw materials, pulpwood, capital invested in woods operations).....	70,143,000
Fisheries (capital invested in boats, gear, etc., in primary operation).....	8,163,000
Central Electric Stations (equipment, materials, etc.).....	7,109,000
Manufactures (machinery and tools and capital in rural land and buildings; duplication excluded).....	35,570,000
Manufactures (materials on land and stocks in process).....	17,550,000
Construction, custom and repair (capital invested in machinery, tools and materials on hand).....	6,055,000
Trading establishments (furniture, fixtures, equipment, materials on hand).....	36,401,000
Steam railways (investment in road and equipment).....	104,000,000
Electric railways (investment in road and equipment).....	10,837,000
Canals (expended on construction to March 31, 1927).....	1,494,000
Telephones (cost of property and equipment).....	8,137,000
Urban real property (estimate of real value and of roads, sewers, etc.)	178,752,000
Shipping (estimated from 1918 census).....	10,080,000
Imported merchandise in store (one-half imports 1926).....	13,625,000
Automobiles.....	20,322,000
Household furnishings, clothing, etc.....	69,000,000
Specie, coin and other currency held by Government, the chartered banks and general public.....	14,693,000

(This amount equals 3.09 per cent of the total wealth of Canada)\$853,649,000

NET VALUE OF PRODUCTION BY INDUSTRIES IN NOVA SCOTIA, 1927

Agriculture.....	\$ 33,733,000
Forestry.....	11,018,818
Fisheries.....	10,783,631
Trapping.....	207,326
Mining.....	30,111,221
Electric power.....	2,463,923
Construction.....	19,131,056
Custom and repair.....	2,493,000
Manufactures.....	32,398,977
	\$142,340,952
Less duplication.....	9,494,852
Total.....	\$132,846,100

PHYSIOGRAPHY OF NOVA SCOTIA

Some knowledge of the physiography of Nova Scotia is a useful clue to its mineral, forestal and agricultural resources.¹

In very early times what is known now as an Atlantic upland was part of a sea-bottom extending from Yarmouth to Labrador. This was a submarine plain caused possibly by denudation of elevations, or more probably by marine flattening agencies. The wide extent of slate or quartzite throughout the present land indicates that the conditions of deposition were uniform over large areas of the ancient sea floor.

After these immense belts of mud and sand had been spread out and consolidated, mountain-forming movements set in and a mass of wrinkled beds rose above sea level, probably not for the first time. The ancient floor, now folded into mountain systems, was then invaded by ascending masses of fluid granite igneous rock, which, owing to its heat, altered the character of the upheaved deposits of mud and sand, in some places so radically that it is difficult to distinguish resulting schists and gneisses from the crystalline granite itself.

The elevated system thus formed was then exposed to the action of torrential rain and rivers which hollowed out those parts of the surface occupied by the least resistant rocks.

In course of time the land level sank so far that the sea pushed the shore line backwards about a hundred miles from the Sable island line, leaving a series of "banks," flooding the mouths of valleys and making many bays of irregular shape.

It was possibly before this period of sinking that the region was covered by the North Atlantic ice sheet, which spread from northerly centres as far as the banks that lie off the southern coast. By the time the glacial period began the old river systems were already maturely developed; the drainage was natural and there were few if any lakes. The glacial inroad dammed the old drainage at

(1) See Geol. Survey Memoir 140, J. W. Goldthwait.

thousands of places and left a large residue of morasses, bogs, ponds, and lakes before it melted away. Glaciation, however, handsomely compensated Nova Scotia for the despoilment of much good land by a valuable legacy of hundreds of water sites formed by diversion of streams from their natural courses to the rocky ledges from which they fall.

The theory that it was the ice sheet that carved out the river valleys and inlets is a mistake. These valleys are the work of rain and river during a previous age. No doubt the ice sheet altered the valleys in detail, but the inlets and harbours are not true glacial fiords as in Alaska and Norway.

The physiography of Nova Scotia is consequently a result primarily of cosmic agencies such as upheaval and depression of ocean beds, climatic forces and intrusion of igneous rocks, secondarily, to the strong or weak resistance of the formations to climatic forces or to glacial action, ultimately, to the continued action of wind and storm and underground water, denudation of forests and human endeavour.



Lunenburg Fishing Port

The Four Big Industries

FISHERIES

The Maritime Provinces stand in a somewhat similar relation to the world-supply of fish as the Prairie Provinces to that of wheat. Each region has a supply of food, "inexhaustible" in theory and under intelligent care inexhaustible in fact. The shallow feeding grounds of "The Banks," supplementing those of the North sea, helped to supply Europe with fish before John Cabot came to Labrador in 1497. In 1600 the English had 200 sail and 8,000 men working off Newfoundland and Cape Breton.

"The Banks" are a continuation of the coastal plain that extends from the gulf of Mexico to New Jersey and dips beneath the sea in southern New England.

Few realize how closely the Atlantic fisheries assisted at the birth of the British Commonwealth. "Fisheries and woollens," says a well known writer, "were the cradle and the swaddling clothes of English shipping." In the Middle Ages, when the Germans ruled the sea, they drew much of their revenue and all their sailors from the fisheries in the Baltic, where the herring took refuge from his natural enemy the whale. When the Dutch whalers chased the whale to the north, the herring dared to come out of the Baltic and down the Channel. The Dutch then thrived on the herring fishery, and the Germans abandoned fisheries for commerce. When "the badde dealings of the Easterlings" (*i.e.*, the Hanseatic League on which the Plantagenets depended for loans and carriage of armies) almost drove the English out of the trade with Russia whence they drew a supply of naval stores, and had suppressed the English shipping, it was left to the Merchant Adventurers, organized in Tudor times, to build it up again. They proved equal to the task by exploring Newfoundland and North America for independent supplies of shipping material and fish, so that when the time came to wrest the mastery of the sea from Spain and Holland successively, England had a trans-Atlantic basis of supply and seamen trained in the hardy school of the North Atlantic. By the middle of the 18th century, the French economic system was still more firmly built on Canadian timber, fisheries, fur and West Indian sugar, and when the final struggle

came the fisheries were no small part of the trophies of war. "La pêche, c'est ma folie," said Choiseul, and his great opponent Pitt, in 1761, swore that he would fight six or seven years more in America to hold the fisheries.

The fisheries of Nova Scotia are under control of the federal Government through the Department of Fisheries. Close supervision on land and sea coast is maintained to safeguard the fisheries from illegalities.

The Fish Culture Division of the Fisheries Branch also carried on extensive operations for the propagation and distribution of Atlantic salmon, speckled, rainbow, and brown trout. The hatcheries in Nova Scotia are located at Margaree, Bedford, Middleton, Antigonish and Yarmouth. The distribution therefrom in 1928 was upwards of 7,674,000 salmon and trout.

Special provisions are made for the encouragement of the fisheries and the protection of the fishermen. By an Act of 1906 a bounty of about \$160,000 is given annually to aid and encourage the fishermen in securing improved equipment. Of this amount, Nova Scotia has been entitled to more than one-half.

During the fishing season, the Fisheries Intelligence Service provides for daily reports, by telegram and wireless, of the daily weather probabilities, and reports of conditions affecting the fisheries. In similar manner it provides for the collection of information concerning supplies of bait day by day along certain stretches of the coast during the spring and summer months. This information is gathered by the officers of the department by telegram or telephone, and communicated immediately to the fishing centres and fleets. Daily broadcasts are made from Halifax, Louisburg and St. John.

The service also provides for the general dissemination of fisheries intelligence and for the collection of monthly statistics of the sea fisheries, as well as the compilation of such information in a summarized form for publication through the press. A Fisheries News Bulletin is also issued monthly. In addition, a quarterly bulletin containing the statistics in detail is published. This publication is distributed to the trade and all directly concerned.

A special patrol and medical service is provided in the fishing areas to which the Lunenburg Grand Banks fleet resort. These areas are also frequented by quite a large number of European fishing vessels, principally French, which include steam trawlers, and on complaint that steam trawlers were interfering with the fishing operations of the schooner fishermen and were destroying their gear, it was decided to send a Fisheries Protection cruiser to accompany the fleet and observe whether such destruction was going on, and, if so, wittingly. The presence of the cruiser has undoubtedly had a great effect in causing the steam trawlers to carry on their operations without destroying the schooner fishermen's equipment.

Also, there was in the aggregate, much time lost by the fishing schooners owing to minor injuries and sickness amongst the crews. In the latter case, it sometimes was necessary for a schooner to give up fishing and make for port, so as to place the sick person within reach of proper medical treatment. Hence it was decided to have a doctor accompany the Fisheries Protection cruiser, and to equip the cruiser with an adequate supply of drugs, etc., that would be likely to be required. Instructions were, therefore, given that in instances where members of Canadian crews were found to need hospital treatment, they should be conveyed to the nearest hospital. In addition to the sense of confidence given the members of the fleet by knowing that competent medical assistance is within reach, as well as the comfort and help that has resulted from immediate treatment of minor injuries and illnesses, much loss of time to the fleet, as a whole, has been avoided.

The medical service was started in 1924. It was available during the latter portion of that season, from July 3rd to September 10th. In that time eighty-five cases were treated. In 1925, one hundred and twenty-cases were treated; in 1926 one hundred and seventy-six, and in 1927, two hundred and twenty-three. In 1928, three hundred and three cases were treated. Of this number sixty-five were minor operations, and twelve patients were conveyed to Saint John's, or other ports for hospital treatment.

The Fish Inspection Act applies to pickled herring, mackerel, alewives, and salmon other than mild cured

salmon, and prescribes the material to be used in the manufacture of the container, the size of such container, and how it shall be made and marked, and prescribes the requirements as to the quality and weight of fish in the container, and how and by whom the container in which fish are packed shall be marketed.

On the Atlantic coast, as a whole, some 45,000 barrels of pickled fish are inspected and marked each year. Also,



Drying Cod at Digby

about 70,000 boxes of smoked herring for export are inspected. In addition, some 50,000 empty barrels and pails for containing pickled and smoked fish are examined to ascertain whether or not they were up to the standard provided for in the Act. Under this inspection the quality of the cured fish has greatly improved.

The 126 lobster and other canneries, and the 86 fish curing plants in Nova Scotia (1929), are systematically inspected for sanitary condition and the cleanly handling and soundness of the fish. The Fisheries Branch also offers expert advice as to the curing of all kinds of fish, and the

cooperage of proper barrels. Private cold storage establishments are maintained at Canso, Mulgrave and Halifax, at Lockeport, Port Hawkesbury, Lunenburg, North Sydney, Yarmouth and a few other centres. The fish may be packed in containers with crushed ice or dipped in ice water for air freezing or glacing before being stored.

The products of the Nova Scotia fisheries had a total value in 1929 of \$11,455,491. The industry employed 19,823 hands, and used 10,864 vessels and gear, valued at \$7,446,835. The 221 canneries, curing houses and reduction plants were valued at \$3,775,080. There were also about 3,600 small smoke houses. Of the cured fish put up in Nova Scotia each year about 90 per cent is exported to the West Indies, South America, Spain and Europe generally. Canned lobster of the highest quality is exported to Great Britain and France and other European countries. About 55,000 cases are canned annually, valued at \$1,500,000.

The chief fish marketed in 1929 were, in order of value, cod, lobsters, haddock, herring, halibut, mackerel, hake, salmon, smelts, scallops, swordfish. The Nova Scotia lobster fishery is the largest and most productive in the world. The catch for 1929 was 19,003,500 lbs., with a landed value of \$2,156,776.

An important distinction is to be drawn between "ground fish," such as cod, halibut or haddock, which are permanent off the coast, and "school fish," such as herring, mackerel, tuna or swordfish, which appear annually in season along the coasts.

Experiments carried on in 1923 by the Biological Board of Canada with the co-operation of the Newfoundland Government tend to prove that cod are particular about the temperature of the water, which should be between 40 degrees and 45 degrees Fahrenheit to suit them. It is suggested that if cod fishermen were to study the fluctuations of the water temperature and the causes, their labour would be lessened and good catches assured.

Herring.—A French writer has said that "the herring is one of those productions, the use of which decides the fate of empires," and there is an old saying that "Amsterdam was built on herring bones." The historical influence of the herring is seen in the formation of the Hansa League, "shipmoney," Cromwell's war with the Dutch, Navigation Acts, and the merchant marine.

The herring is not only one of the most widely used food fishes in the world, being cheap, nourishing and appetizing, but also a necessity as bait for the catching of other fishes, such as cod and haddock. The industry is capable of a very large increase in extent and value. Why is it that the Scotch and Norwegian catch of herring alone approaches in value that of Canadian fish of every kind? It is not the case that the Canadian herring before being



The Herring Industry at Lockeport

caught is at all inferior. One reason, apart from the proximity of the great European markets to Britain and Norway, is that the European fishermen catch the "fat" herring (18.6 per cent protein, 3.4 per cent fat) in drift-nets far out at sea, while in Canada the larger adult herring is taken in herring traps and in wide-meshed nets near the coast. In Norway, as in Canada, at one time all the herring fishing was in-shore fishing, until successful experiments proved that the finest herring were to be had farther out at sea, where now hundreds of thousands of barrels are taken by drift-nets every year. In 1914-15, at the suggestion of

the Biological Board of Canada, the investigations begun in 1904 by the Department of Marine and Fisheries were continued by Dr. Hjort, Director of Norwegian Fisheries, whose researches proved that the types of European and North Atlantic herring are closely parallel. The problem now remains to discover the whereabouts in season of the vast schools of "fat" herring mattjes which must exist somewhere off our shores. Research is on the track of these "outside" waters, and, if the "fat" fish once caught is properly handled by the fishermen, properly cured by trained hands, properly graded and packed in good barrels and carefully pickled, the normal price of a barrel should double and the catch be greatly increased.

Shad.—The supply of this fish, considered by many the most delicious fish of the Atlantic coast, together with its roe, though very abundant during the 19th century and earlier, has since then from various causes greatly diminished, but it is gratifying to record that, in spite of the difficulty of artificial propagation of the fry, the catch is again increasing.

In 1929 the value of the shad marketed was \$8,057.

Swordfish, Tuna, etc.—A great extension of sword-fishing has been noted in the last few years. A fleet of boats from all parts of the coast, often numbering some 150, may be seen gathered off Louisburg ready for the "school."

The tuna, named also "tunny" and "horse mackerel," is considered in France an important fish for preserved food. Until the last few years it was deemed a nuisance by Nova Scotia fishermen, but markets in Boston and New York are now ready buyers. The Nova Scotia tuna industry centres in St. Margaret's bay, and St. Ann bay.

There are several other fish in the Nova Scotia limits whose value has not been fully realized, such as the Canadian plaice and several other varieties of the flounder family. Other fish have simply been thrown out—the wolf-fish or "sea cat," with delicious flaky flesh, whiter than halibut, the goose-fish, and the skate, whose "wings" are now in good demand. Another castaway, the lump fish, is prized as a dainty dish only around Halifax and the bay of Chaleur, N.B.

The roe of most fishes, apart from that of the sturgeon (caviare), has been too little utilized in Canada as an excellent and nutritious food. In France it is valuable also as a lure in the sardine fishery, and is known as "rogue."

We may note that the sea snail, or periwinkle, is marketed; and that a pink pearl from the many fresh-water pearl mussels to be found in Cape Breton island and



Tuna Fishing on the South Shore

elsewhere, fetched \$250 in New York. Dulse of a good quality is gathered at Digby, and is found at other points. The value of green and dried dulse marketed in Nova Scotia in 1929 was \$840.

Oysters, Scallops, Eels and Winkles.—The chief oyster beds are on the west coast of Inverness county and in Cumberland, Pictou, and Antigonish counties, but there are smaller beds at several points on the coast, and in the greater Bras d'Or.

The winkle industry is confined to the shores of St. Mary bay and Digby neck. Boston and New York are

good markets for eels. The catch for 1929 was 140,500 pounds.

"Chester scallops" are a Nova Scotia specialty, and Mahone bay and the Digby area have yielded largely. New scallop areas have recently been found in Shelburne county waters, and there are also scallop beds at various other places along the coast. The scallop, unlike the oyster, has the power of locomotion. Production value in 1929 was \$110,192.

Sealing.—For several years one or more steamers have been sent out from Halifax and North Sydney to prosecute the seal-fishing industry. As many as 250,000 seals have been seen in past years on the ice at one time in North Atlantic waters.

Oil.—The increasing output of cod oil (\$33,536) and medicinal cod liver oil (\$24,367) and of other fish oils (\$29,295) amounted in 1929 to 156,919 gallons.

Eelgrass.—The value of cured and pressed eelgrass, not only as a stuffing for furniture, but especially as a material for insulation in cold storage plants and for a quilting in house-construction, is now understood. The manufacture is already established at New Glasgow, and gathering eelgrass is an industry which has long been pursued at a number of points along the coast. (See p. 116.)

Utilization of Fish By-products and Waste.—The value of fish waste, and of varieties of fish unfit for food, as a by-product of a great fishing industry is hardly realized, and the nitrogenous and phosphoric fertilizer, oil, glue, fish-meal, etc., derivable from these are mostly lost. Apart from the oil, the total value for Nova Scotia of fish by-products in 1929 was \$231,982, to which fish meal contributed \$161,143 but fertilizer only \$157. A ton of dried fish scrap after the elimination of the oil by modern processes contains about 8 per cent nitrogen and 8 per cent available phosphate. With nitrogen at \$3.50 a unit, and phosphorous at \$1.30, a ton of dried scrap is worth as a fertilizer about \$38. As it is estimated that 15 per cent of all the fish caught are discarded, larger profit might be derived at one or more central stations having collection facilities and plants suitable to the manufacture of oil, fertilizer, fish meal, and glue.

To encourage the destruction of the dog-fish that roam the sea like packs of wolves and do untold harm to fish and gear, and also to utilize their carcasses and other fish waste, the Government at one time established reduction plants in Nova Scotia. Even the eggs of the dog-fish (as large as hen's eggs) have a special value for tanning. The best kind of glue is a product of fish skins. To us the value of desiccated fish meal as a food for pigs and cattle, if not for men, as in Japan, is better known than in the past. Fish meal is as valuable as other high-protein feeding stuffs, and in some instances has been proved more valuable; there is no just cause for the assumption that the feeding of fish meal of good quality imparts a fishy taste to milk, butter, eggs and meat; there is great need of fish meal as a stock food and a constant market in Britain and Northern Europe, if not nearer to the source of supply in Canada.

There are three well defined provincial fishing areas: first, the inner shoals and ridges from five to ten miles seaward, where the shore boats operate, secondly, the middle grounds still further from land, and thirdly the great banks, or extensive undersea plateaux. It is of great advantage to Nova Scotia that all the most prolific fishgrounds of the two first-named areas can be easily reached in two hours by a boat with auxiliary power from any southern harbour.

The larger percentage of the fishermen own their boats and gear. They are freeholders, native born in the shore settlements, and by family tradition and experience as daring as they are skilful. The shore boat is a launch of from one to ten tons propelled by a high-power engine, evolved from the clinker built skiff or "flat" propelled by oars, but, in place of an outlay of \$100 in past days, to equip a modern motor boat and run it for a year costs \$1,500. The bank schooners are also the best of their class and native built, a typical craft being the famous Bluenose, of Lunenburg, winner of the International Fishing Schooner race.

A scientific connection between such natural conditions as amount of sunshine, salinity and temperature of waters, and the supply of minute plants, shrimps and other fish food has of late years been established in European countries, resulting in an ability to foretell in some measure

the abundance or not of herring, hake, tuna, etc., in a coming season.

The Marine Biological Board of Canada, relying on an accumulation of facts by systematic cruising, and on the co-operation of fishermen who furnish information as to place, season and quantity of fish caught, is providing similar information of great economic value to the fishing industry.

This Board has a station at Halifax for practical education and investigation. A thorough study of the smoked fish industry with a view to further improvement of the product and a lessening of the cost of production is an example of the work done. Dalhousie University, in co-operation with the Department of Marine and Fisheries and the Biological Board, has established a graduate course in fisheries.

Among recent scientific discoveries relating to fish may be mentioned that of the value of cod and pollock as a source of insulin.

Recent research into the importance of iodine salts as vital to the health and growth of humans and animals, especially those that live away from the sea, should indicate to Nova Scotians the present value of dulse and other seaweeds common on the coasts. Scientists now advise the use of dulse and Irish moss in "puddings, jellies and stews as these seaweeds contain the largest percentage of iodine of any foods that come on our table." Plants for the carbonization of seaweed with a view to the extraction of iodine and potassium carbide may later be the basis of a new industry for Nova Scotia, and possibly the drying and grinding of a seaweed (*fucus furcatus*) to produce a fertilizer analysing 1.32% N, 0.29% P_2O_5 , and 2.26% K_2O .

MINING AND MINERALS

The granting by George IV in 1826 to his brother the Duke of York of a 60-year lease of all the mines and minerals not previously granted, though a source of irritation at the time as it well might be, has proved a blessing to the province which inherited the royal lease and collects its royalty on the gold, coal, salt and other minerals mined during the year.

The royalties are:—

Coal — $12\frac{1}{2}$ cents per long ton.

Copper — 4 “ per unit.

Lead — 2 “ “

Zinc — 2 “ “

Iron — 5 “ per long ton.

Tin, precious stones and other minerals—5 per centum of their values.

Gold—35 cents per ounce.



Dominion Steel and Coal Corporation Works at Sydney

The revenue from this source in 1929 amounted to \$708,772, beside the income from rentals, licences, etc., amounting to \$60,661.

The seven counties in the southwest lying between the bay of Fundy and the Atlantic are occupied by hard quartzite and slate formations (Lower Cambrian or Precambrian?), broken by one very large and several smaller areas of intrusive granite. The same formation continues all through the southern part of Halifax and Guysboro counties as far as cape Canso. Exceptions to the above are, first, the narrow strip of trap rocks extending along the bay of Fundy from Brier island to the Minas basin, known as the North mountain, and secondly, the Triassic strata

of the Annapolis valley which it shelters. Both of these minor formations extend across the bay of Minas into the northern part of the peninsula.

The mass of the northern part, including Cape Breton island, is occupied by the Carboniferous and Devonian strata, broken up, however, especially in Pictou county, by several other formations, Silurian, Precambrian (in Inverness and Victoria), etc.

Coal, Iron, Limestone.—These form the tripod on which the iron and steel industry rests, with all its ramifications such as the manufacture of railway materials, mining machinery, guns, ordnance, armour plate, shafts, anchors, ships, bridges, agricultural implements, automobiles, boilers and engines.

The coal leg of this tripod is wholly Nova Scotian. The limestone used for open-hearth flux is also Nova Scotian, but that which is used for blast furnace flux is brought to Sydney from Newfoundland. The iron ore is now brought from Newfoundland and abroad.

Coal.—Cape Breton coal was mined for the use of the garrison at Halifax in 1749.

Outside of the small deposits of Rhode Island anthracite, Canada's maritime deposits stand alone on the entire length of the Atlantic seaboard of this continent. These deposits in Nova Scotia and New Brunswick are considered to be the southern border of a carboniferous basin occupying the greater part of the area of the gulf of St. Lawrence. The supply at the present rate of consumption is estimated to last 700 years. In 1929 the reserve was estimated by the Nova Scotia Department of Mines at 36,000,000,000 tons. An earlier estimate (1915) by Dr. Dowling of the Geological Survey was, actual reserve 2,188,151,000 and probable 9,718,968,000 tons, of which 6,702,457,000 tons were "marine."

The quality of the coal is bituminous and especially suitable for blast-furnace coke, gas and steam. All the richer deposits are above the carboniferous limestone in strata considered to be of the same age as the coal measures of Great Britain.

In Nova Scotia there are four coal-fields with thick seams. The most important of these is the Sydney coal-field of Cape Breton island, which supplied, in 1929, about

76 per cent of the Nova Scotia output, and has an area of about 200 square miles. Its most valuable seams lie between Mira bay and cape Dauphin, extending beneath the sea. The extent of the submarine coal area is doubtful but the prospect is that this may become the most extensive theatre of under-sea mining existent. The strata are almost free of faults of any size and have gentle dips.

The other fields are, the Inverness field, including a series of areas extending for 50 miles along the western shore of Cape Breton island and supplying 1.4 per cent of the output, and the Pictou field, on the mainland supplying 11 per cent. This field has an area of about 25 square miles, and is of intricate geological structure. The presence of numerous faults is balanced by the size of the seams, which vary from 10 to 38 feet. Further west, on Chignecto bay, is the Cumberland coal-field, supplying a further 11.6 per cent.

In the Final Report of the Fuel Controller, March, 1919, the question of the substitution of coke for anthracite and the profitable utilization of the resulting by-products is fully discussed. The following quotation is suggestive, and seems on the way to bear fruit. "There does not seem to be any good reason why Nova Scotia coals should not cover the market for domestic fuel even to the head of lake Ontario. The mines of Nova Scotia are practically all either on or within a few miles of tide-water and good harbours, so that the transportation problem becomes a relatively simple one. The quantity of coal available is enormous, and there is no doubt that the output can be largely increased and put on board steamers at such price as to make the erection of a distillation plant and the invasion of the Quebec and Ontario anthracite market a highly profitable investment."

The competition in this area arises from the cheap supply of bituminous coal from the Ohio and Illinois fields and of anthracite slack from Pennsylvania.

The output of coal in 1929 was 7,056,133 tons, of which more than 2,000,000 tons were marketed in Quebec province.

By-Products of Coal and Coke.—Important use was found for the by-products of the 459,305 tons of coke made in 1929. The gas from the 600 or more coke ovens is used

in the manufacture of steel; a certain amount of the crude tar, much of which, however, has to go to waste, is handled by the Dominion Tar and Chemical Company, and there is a large production of sulphate of ammonia, mainly exported. (Production, 1929, tar 7,012,027 imperial gallons; sulphate of ammonia 9,048 tons.)

"The great market is undoubtedly to combine the four products, benzol, toluol, xylol and solvent naphtha, as a motor fuel. This fuel has been carefully tested and found to give from 20 to 30 per cent greater mileage than the best gasoline with about 15 per cent greater power, easier starting, no knock with advanced spark and actually less tendency for the formation of carbon in engine cylinders." (Fuel Controller's Report, 1919, p. 81.) The manufacture of benzol for motor fuel increased from 246,541 imperial gallons in 1922 to 1,283,978 in 1929.

The increasing use of pulverized fuel and the education of the public in the value of briquettes are likely to aid in solving the problem of how to use excessive slack; and the manufacture of briquettes would also provide an outlet for the superfluous tar, incident to the manufacture of coke. Nova Scotia coals treated at Sydney yield, per ton, about 10 gallons of tar, 11,000 cubic feet of gas, 5 to 6 pounds of ammonia and coke equivalent to 65 per cent of the coal weight.

Iron.—The iron ores of Nova Scotia are found in comparatively small beds and pockety deposits which cannot now compete with the hematite of Newfoundland. The Londonderry mines, which were opened in 1849, have been idle since 1908, and those of the Nictaux-Torbrook district, in Annapolis county, though yielding 350,000 tons between 1891 and 1913, are no longer worked. Other deposits are in the Pictou iron range and at Arisaig.

The main source of supply is in the Wabana mines, on great Bell island in Conception bay, Newfoundland. The ore is hematite of high grade. The distance of shipment is 400 miles. In 1929, 627,231 tons were imported from this source besides 242,973 tons from foreign parts.

Limestone.—The Nova Scotia quarries of the limestone used for open hearth flux are all on Cape Breton island and comprise the Marble Mountain quarry in Inverness county, the George's River dolomite quarry, and the Point Edward

quarry, all owned by the Dominion Steel and Coal Corp., Ltd. Limestone for blast furnace flux is imported from Port-au-Port in Newfoundland.

With abundant coal and limestone on the spot, with iron-ore of very high quality in unlimited amount obtainable close at hand by cheap water transportation, and with harbours such as Sydney, Louisburg and New Glasgow for



Wire Shop of Dominion Steel and Coal Corp. at Sydney

shipment up the St. Lawrence into the heart of the Dominion or to any other part of the world, Cape Breton island and Pictou county must rank as a most important centre of the iron and steel industry.

Oil Shales.—The strata in Nova Scotia are said not to be favourable for a flow of oil or for natural gas, but in Pictou county there is a considerable area of oil shales which should prove of importance not only for the high percentage of oil in certain varieties of shale, but from its position in the heart of a manufacturing district and its accessibility by sea.

"The oil shale of Pictou county occurs in the productive coal measures, which underlie an area of approximately 20 square miles in the vicinity of New Glasgow No systematic effort has been made to determine the number, thickness or extent of the various beds of oil shale The structure is so simple that the extent and average yield of the various beds can readily be proved by careful geological mapping, followed by core-drilling and analysis. The deposit is located in the midst of the coal and steel industry and the situation is ideal for developing a new industry." (Geol. Survey Mem. 129, 1922.)

To establish a shale oil industry a large outlay of capital is required. The retorts used in the manufacture of the products are now on the free list, and the other more costly machinery is subject to a rebate.

There is also an area of shale in Antigonish county. Cape Breton island has not been prospected for oil-shale, although beds have been reported near East bay and the geological horizons are such that important deposits might be found. The "Torbanite Products, Ltd.," of Montreal, has erected a plant near New Glasgow to utilize the torbanite shales in this area.

Peat.—While none of the Nova Scotia peat bogs are at present regarded as specially suitable for large scale commercial exploitation, a number of them are capable of producing litter and fuel for domestic purposes. The federal Department of Mines has in the past few years examined and reported on 27 bogs, totalling 12,265 acres in extent. Of these, 19 are in Guysborough county, 3 in Shelburne, 3 in Yarmouth and 1 each in Lunenburg and King's. All the bogs in Guysborough county but one (Crane lake) and the Caribou bog in King's, are essentially composed of litter (fibrous) peat. The remainder of the bogs of the province are mainly composed of humidified (fuel) peat. Fibrous peat is finding increased utilization as a stable and poultry litter. It is also used as a filler for fertilizers, for packing fragile articles, and for the preservation of fresh fruit and vegetables during the winter months. Owing to its excellent heat insulating qualities it is also finding favour as a packing medium for shipments of perishable food products, flowers, shrubs, and plants in cold weather.

Gold.—The gold-bearing rocks of Nova Scotia lie in the wide strip of lower or Precambrian quartzite and slate formations, which extends from cape Canso to the bay of Fundy south of latitude 45° , and which is broken by large granitic intrusions, mainly in the southwest of the province.

The district is about 275 miles in length, with a varying breadth of from 10 to 75 miles. Its area is figured at 10,250 square miles of which about one-third is occupied by the granite. The gold occurs almost entirely in quartz veins interbedded generally in the sedimentary strata. The more easterly part of the field has been more productive than the westerly, for here the geological structure appears to have been more favourable to the formation of auriferous deposits.

The recovery of gold in small quantities has been constant since the discovery in 1860. In the early days of the Royal Mint at Ottawa the gold of Nova Scotia and what came to Halifax in H.M. cruisers made up nearly the entire supply.

From 1862-1866, \$1,792,516 worth of gold was taken out, and the average value per ton of ore crushed, down to and including 1917, was \$8.80. The record yield is 30,348 oz. in 1902. Production in 1929 was 1,568 oz.

The gold-bearing rocks have been divided into the quartzite formations of Goldenville and the slate formations of the Halifax area. The Oldham gold-field, 25 miles north of Halifax, near the summit of the watershed, has been worked continuously since its discovery in 1861.

The active mines are at present confined to Halifax and Guysboro counties. The Goldenville district in Guysboro, about 12 miles east of the Halifax county line, yielding 936 oz. had, in 1929, the largest output in the province. The other producers were Renfrew (453 oz.), Beaver Dam (87 oz.), Uniacke district (35 oz.), Malaga Barrens (54 oz.), Oldham district (1 oz.), Brookfield (14 dwt.). In 1917 a mine at Kemptville in Yarmouth county yielded its owner \$679 from 3 tons of ore. Gold is also found in Victoria county.

In estimating the value of the gold production of Nova Scotia, we may remember that Ontario, whose yearly

product is now about 1,600,000 oz., produced only 2,011 oz. in the year preceding the opening of the Porcupine district. Considering the long continuance of finds, small though they have been, and generally the extent of the field and its analogy to fields that have been markedly successful, Nova Scotia may be considered one of the four or five gold-bearing areas of Canada.

The scarcity and cost of labour, uneconomical methods of extraction and the high cost of operating the narrow veins suggest the more extensive use of the diamond drill,



Canadian Gypsum Co. Storage and Crusher Plants at Windsor

and the application of hydro-electric power as possible means of reviving the industry. Water-power in the Sheet Harbour area is being developed by the Nova Scotia Water Power Commission.

Gypsum.—The gypsum deposits of Nova Scotia are the largest of any at present known in Canada. Outside of coal, gypsum is probably the most important mineral, as regards tonnage, being exploited in the province, and even yet only a small proportion of the available deposits is being operated.

The mineral occurs in the Lower Carboniferous formation and is closely associated with beds of anhydrite and

limestone. Numerous outcrops are encountered throughout the whole of the northern half of the province, extending from the district in the neighbourhood of Windsor, Hants county, eastward to the district around Antigonish, Antigonish county, and also through the northern half of the island of Cape Breton.

Many of these deposits are exposed in cliffs which vary from 50 to 200 feet in height, and are easily accessible to rail or water transportation. Large shipments were made from the Windsor district as far back as 1829 and even earlier.

The gypsum on the whole is massive and is a good quality of white rock. Selenite is occasionally found associated with the massive gypsum, sometimes in veins up to a foot in thickness, and sometimes as small crystals evenly disseminated through the massive material.

In 1929 the production of crude gypsum was 1,021,081 tons, most of which was shipped to the United States and Quebec for calcining, but during the past year 11,978 tons were calcined in Nova Scotia, an increase of 3,078 tons above the amount treated in 1928.

In 1924 the production of crude gypsum was 435,393 tons, nearly all being shipped to the United States for calcining. The Dominions Royal Commission Report (February, 1917) remarks that "the people of Canada had to buy the gypsum back in the form of plaster at a greatly enhanced price." Plaster of paris is, however, shipped to New Zealand from Iona, C.B., and markets are found in New York, Quebec and Montreal.

A report entitled "The Gypsum Industry in Canada," has been published by the Mines Branch, Department of Mines, Ottawa, in which the deposits of this mineral in Nova Scotia are described at length. A copy of this report can be obtained by applying to the Director, Mines Branch, Department of Mines, Ottawa.

Salt.—The discovery in 1916 of a bed of rock salt is proving of great importance to the Maritime Provinces, where the fishing industry alone consumes 50,000 tons a year. The deposit was found under a farm near Malagash, Cumberland county. In October, 1918, the prospect shaft struck rock salt at 85 feet, and in 1922 at a depth of 200 feet a six-foot face of white salt, 99.1 per cent pure, was opened

up. In 1930 the depth of working was 350 feet. At a lower depth potash in commercial quality is considered likely. This supply of rock salt is of special interest, for research has proved that, if this or other mined salt is used in place of the tropical or solar salt imported for the curing of fish, red discolouration of cod is thereby avoided. The salt is also used for preserving mine timber by a process of salt pickling.

The second grade salt is dissolved into brine, which on evaporation in a special plant yields a very pure white salt. The salt reserves are estimated at 25 million tons.

At present the only other salt-producing district in Canada is in western Ontario, the salt needed in the Maritime provinces being still largely imported from Turks island and the Mediterranean. About one-third of the 500,000 tons consumed yearly in Canada is imported.

A salt deposit occurs at Falmouth, Hants county, and brine springs have been located at various points between Baddeck and Springhill, and also in the Windsor and Walton area, but no rock deposit of economic value was discovered until 1916.

(Production, 1929, 27,819 tons, value, \$157,662.)

OTHER MINERAL DEVELOPMENTS AND OCCURRENCES

Wartime needs led to diligent prospecting and extraction of the less known minerals, but recently the production of these has been confined to diatomite and barytes.

Antimony.—In the West Gore district of Hants county 533 tons of antimony concentrate were produced in 1918, but there has been no shipment from Canadian sources since the heavy decline in price. In 1928 prospecting work was renewed.

Arsenic.—Highly mineralized veins of arsenical pyrite ore are found at Wellington, Halifax county, near Farmington in Cumberland county, and at Moose river. A few years ago it was hoped that the recovery of arsenic from the arseno-pyrites common in the gold fields of the province would prove a profitable adjunct to the gold mining, and for a time arsenical concentrates were shipped to refineries in Belgium, but now practically all the world's demands are supplied by by-product arsenic from silver-cobalt-nickel-copper smelters. With As_2O_3 at 4 cents a pound.

its price for some years back, there is no call for arsenic contained in gold ores.

Barytes.—Is worked at lake Ainslie, Inverness county. In 1929 Nova Scotia with 105 tons (ground) was the sole producer among the provinces.

A monograph (No. 4) on "Barytes Occurrences in Nova Scotia" is to be found in the Nova Scotia Mines Report for 1929.

Copper.—A monograph (No. 7) giving a list of copper showings in Nova Scotia and detailing all work so far carried on is to be found in the Nova Scotia Mines Report for 1928.

Diatomite.—Nova Scotia and British Columbia are the only producers in Canada. Diatomite is shipped from New Annan in Colchester county and from Little River on Digby neck. There are deposits at Salmon River, Digby county, in the Folley lake district, Cumberland county, at Brona lake in Pictou county and at St. Ann, Victoria county. Diatomite or infusorial earth is composed of the silicious skeletal remains of minute aquatic diatoms. It should be distinguished from tripoli or "rotten stone" and from volcanic pumice stone. It occurs in layers at the bottom of shallow lakes and is reported to be available in large quantities in the Dominion Atlantic R.R. territory.

Production of diatomite in Nova Scotia, 1929, 422 tons.

A list of occurrences in Nova Scotia of diatomaceous earth and fuller's earth is to be found in the Nova Scotia Mines Report for 1926 (p. 317).

Dolomite.—Is produced at George's river, Cape Breton, and after being calcined and crushed is used at Sydney to line the floors of the open-hearth furnaces of the Dominion Steel and Coal Corporation.

A monograph (No. 9) on "Dolomite and Limestone" with a list of occurrences in Nova Scotia is to be found in the Nova Scotia Mines Report for 1926 (p. 299).

Feldspar.—A deposit of orthoclase feldspar has been worked experimentally at Beachville, St. Margaret's bay road, Halifax county.

Lead.—Argentiferous galena has been worked at Musquodoboit in Halifax county, and also in Cape Breton county. (See Zinc.)

Lime.—A plant at Windsor produces hydrated lime for building purposes as well as for incorporation in a variety of insecticides and fungicides. Agricultural limestone and chicken grit are also produced.

Magnesite.—A deposit near Orangedale on the Great Bras d'Or lake, Inverness county, has been mined for experimental purposes. Magnesite is essential as a lining for steel furnaces.

Manganese.—In the New Ross district, Lunenburg county, at the time of great demand, a company took out high grade ore averaging as much as 92 per cent manganese dioxide. The waste dumps were also sorted over and a sample ton produced ferro-manganese with 30 per cent manganese and 30 per cent iron. At Walton in the Minas basin, Hants county, a deposit of manganese in sandstone was prospected, the 15 per cent manganese from which could be concentrated to 45 per cent. The price at one time rose to \$250 a ton at Pittsburg. In 1921, 450 tons were mined, but production has gradually ceased. The ore occurs in Cape Breton and Colchester counties and at Nicholsville in King's. Manganese is used for steel alloys and also in making dry batteries and glass.

Molybdenum.—From New Ross there were shipments in the time of high prices, and Gabarus bay, Cape Breton island, was also a producer. Molybdenum in a steel alloy produces the strength and toughness necessary in airplane motors, automobile and tractor construction and in shafting and springs.

Ochre.—Deposits have been worked in King's county, Londonderry area, and there is a good deposit at Ardoise, Hants. Ochre is used as a pigment, and bog-ore for purifying gas.

Radium.—Radio-active rock is reported near Musquodoboit, Halifax county.

Tin.—"The occurrence of tin ore (in Canada) has been reported from several localities, the most important, perhaps, being the discovery of cassiterite near New Ross, N.S." (Mineral Production of Canada, 1916.) See Reports of Geological Survey for 1907 (p. 77), 1908 (p. 154), 1910 (p. 253), 1912 (p. 389).

Tungsten Ores.—The Moose River district in Halifax county, west of the Tangier river, was noticed in the Report of the Munitions Commission as one of the most productive Canadian sources of tungsten minerals, but little has been shipped from the scheelite mines in the last few years.

Tungsten ore (scheelite) was also shipped from Waverley, a point on the C.N.R. north of Halifax. This was hand-picked and sold to the Munition Resources Commission at Ottawa. Tungsten as a steel hardener is more limited in its source than molybdenum, but is specially needed for high-speed tools and electric bulb filaments.

Zinc.—At Sterling, in Richmond county (C.B.) the analysis of an extensive body of ore showed from 4 to 30 per cent zinc, 7.5 per cent lead and 3.5 per cent copper.

Underground work began in 1927 and the erection of a 250 ton mill for treatment has recently been completed.

A monograph (No. 15) on "Lead and Zinc in Nova Scotia," giving a survey of all present activities, is printed in the Nova Scotia Mines report for 1928.

Prospecting.—The study of the dispersion of the glacial drift is a matter of practical interest. In prospecting for gold, tungsten, coal, etc., in Nova Scotia, the first signs of the mineral sought have usually been fragments in the drift; and in many cases the main deposit has been found by carefully tracing this drift or "float" back along the direction of glacial grooves to the parent ledges. (Geo. Survey, Mem. 140.).

BUILDING STONE

It was not for lack of stone in Nova Scotia that Government House, Halifax, was built of blocks sent from France to fortify Louisburg. It is important, in view of a demand for building material, to state where it can be best obtained. Building stone is, in general terms, either limestone, sandstone, or granite.

In 1929 the production of sandstone was 15,928 tons and of finished granite 748 tons.

Limestone.—The limestone of Nova Scotia has been little used for building purposes, though the crystalline limestone or marble obtainable from Marble mountain has attracted the attention of experts. Here there are at least

six varieties, running from fine white statuary marble to dark, striped and variegated. The Grand quarry may also be mentioned as the centre of a field of 200 or 300 acres, about 450 feet above the lake and 300 yards from deep water. From this quarry immense building blocks could be removed, but so far the rock has been used almost entirely for lime and flux. As long ago as 1879 the Geological Survey suggested the working of this field as "a new industry and source of wealth in Cape Breton island," but development lingers.

Sandstone.—The building sandstones of Nova Scotia have been worked in the past more than they are at the present time. The red sandstone of Amherst has been used in most of the public buildings of this town and in Truro, and shipped as far west as Hamilton and Toronto.

The greenish-grey sandstone of the Wallace district, on the shore of Northumberland basin, has been quarried for 100 years and used for many buildings in Quebec, Ontario and the Maritime Provinces. It has also been shipped to New York, Boston and Providence. The Victoria Museum at Ottawa is partly built of this material and trimmed with the blue variety, which lends itself well to carved work. Shipping facilities are good both by water and rail. The present Province House, the Bank of Montreal, and several other fine buildings in Halifax are built of Wallace sandstone. Several quarries are at present in operation in Nova Scotia. A red sandstone has been shipped from the River John area to Toronto and elsewhere and the olive-green variety, known as "Pictou" stone, the amount of which is practically unlimited, has been much used for public buildings, churches, and other purposes in the Maritime Provinces. To this stone a medal was awarded at the Colonial and Indian Exhibition in 1886. At West River, near Scotsburn, in Pictou county, there is a grey sandstone of fine grain and excellent quality, and in the Whycocomagh area, at the head of Saint Patrick's channel, there is a body of red sandstone four miles from tide-water.

Granite.—There are a few areas in the mass of granite intrusives between cape Canso and Yarmouth where granite has been found suitable for building and decorative purposes. The Nictaux fine grey stone is in demand for

monumental work, and has been shipped as far as Winnipeg. The granite of the New Germany district in Lunenburg county has been made use of for heavy construction, such as bridges. Shelburne county has an excellent fine grained granite which can be seen to advantage in the Customs building and Post Office at Shelburne. The Halifax area has fine quarries lying at the edge of the granite mass



Government House, Halifax; Residence of Lieutenant-Governor

extending west from Halifax harbour. This is a very coarse stone with black spots, in unlimited amount, and can be seen in St. Mary's cathedral in Halifax. The Bank of Commerce building at Halifax is built of granite from the disused quarry at Terence bay. There is also a massive field in Guysboro county, at Whitehaven, forming a cliff of 12 feet above high water such that vessels could be loaded directly from the shore. The material is a rather coarse grey to white granite and is considered the most promising in the province for the production of heavy stone.

Decorative Stone.—Volcanic rocks of porphyritic or brecciated structure occur in several areas, the best known of which is Scatari island, off the extreme edge of Cape Breton. The coast is strewn with pebbles displaying a profusion of beautiful colours when wet. The cost of production would be considerable in the extraction of good sized blocks, but there is an enormous amount of stone of unusual beauty, very hard and taking a fine polish. The green and red-brown slabs to be found among others in many museums are particularly attractive.

Tube Mill Pebbles.—Many thousand tons of pebbles of volcanic origin “better than the commercial flint pebbles with which they were compared” could be sorted and shipped from Lever lake and other beaches in the Gabarus bay locality. (See Geol. Sur. Rept. 1917, 23 F-27.)

“*Millstone Grit*,” a buff-weathering sandstone 5,000 feet thick, has been quarried at Wallace for more than a century. Grindstones are quarried from it near Joggins and Amherst. The output of the province, 300 tons in 1927, all came from Merigomish Harbour in Pictou Co. These grindstones were almost entirely tool stones, the larger stones required for the pulp industry being a product of New Brunswick. It is possible that pulp stone of the necessary size (standard 54 inches diameter and 27-inch face), texture, grinding quality and strength could be produced near Amherst and other places. The life of a pulp-stone is about one year only, so that there is a continuous market. The stone when quarried is comparatively soft, but hardens by exposure in storage.

Sand and Silica.—Moulding sands for foundry work are available from deposits near Elmsdale, Belmont Station and Dartmouth. It has been suggested (Geol. Survey Vol. IX, 151 M) that the stretches of white, wind-blown siliceous sand, many feet deep, lying in the neighbourhood of Port Mouton (Queens), and Barrington Bay (Shelburne), might prove of economic importance. Large beds of white quartzite occur at Chegoggin Point, Yarmouth county, and near Millville, in King's. Silica rock is found in large amount near Orangedale and Whycocomagh, and the output is derived from this district and from the Leitch's Creek quarry near Sydney, C.B. Production of silica brick, 1929, 12,416 tons.

Road Material.—Nova Scotia has abundant supplies of high grade road materials. The trap rocks bordering the bay of Fundy are of particular value for this purpose.

Amethysts, Garnets, etc.—Mineralogists will be interested in the minerals found in the neighbourhood of the bay of Fundy. A bed of garnet-bearing rock, 36 feet wide and several miles long, can be seen at Chegoggin Point, Yarmouth county. Fifty per cent of the rock consists of garnets, which range to $\frac{1}{4}$ -inch in size. Garnets also occur



White Sand Dunes of Barrington, Shelburne County

at Dover Harbour (Guysboro), Sherbrooke lake and Dalhousie Road (Lunenburg), and near Shelburne. At Partridge Island, Cumberland county, crystals of amethyst an inch in breadth, have been found covering foot-square surfaces. As early as the year 1605 crystals were sent from Partridge island to Henry IV of France and one from Blomidon was among the French crown jewels. A bushel of amethysts was found in digging a well at Kentville, and they occur in several localities about the basin of Minas. Bloodstone, chalcedony (white, red and blue), carnelian, agate (onyx), jasper, and staurolite are also to be found.

Nova Scotia *zeolites* (chabazite, etc.) were at one time sought by mineralogists. They were obtainable by "going over the cliffs on a rope and digging them out."

Slate.—Good roofing slate was at one time quarried at East Gore and Kentville. Many houses in these localities have slate roofs forty years old and more.

Fossil Forest.—Joggins, Cumberland County. "A world-renowned section of this Carboniferous formation (sandstones, shales, and limestone with 70 interbedded coal seams) "occurs in the sea-cliff at Joggins, where the inclined series of beds is seen in unbroken order for a distance of 10 miles. The coal measures are full of interesting markings and structures that show the conditions under which they accumulated. Fossil tree stumps, rooted in place and erect though enveloped in sand and subsequently turned to stone by mineralizing underground waters, mark the sites of coal forests of the medieval stage of earth history. Reptile skeletons in some of the stumps show that primitive lizards found refuge in hollow trunks. Foot marks on the surfaces of mud layers, now completely indurated, relegate these creatures to the mud flats of long ago. Raindrop pits tell of passing showers, mud cracks, of intervals of warm dry sunshine during the building up of the deposits. Few sections on this continent have furnished such a clear and realistic picture of past geography as this section of Joggins." (p. 54. G. S. Mem. 140.)

Clays and Shales.—Nova Scotia is more liberally supplied with raw materials suitable for the use of the clay-worker than any other province except Saskatchewan. This is in large part owing to the presence of Carboniferous coal measures, as this series of rocks, in addition to the coal beds, contains numerous beds of clays or shales. Very valuable clay beds of Cretaceous age occur at Shubenacadie in Hants county, and in the Musquodoboit valley in Halifax county. These clays are of the stoneware and fireclay types.

The late marine, or Pleistocene, clays are found at many localities, notably in the Annapolis valley and along the line of the Canadian National railways between Enfield and Shubenacadie. These marine clays, which are generally reddish in colour, occur on the surface, and are soft

and stoneless. They furnish the raw material for a good red building brick, and for field drain tile and flowerpots.

The shale deposits are seen to best advantage in the Sydney, Inverness, and Pictou coal-fields in natural exposures, either in cliffs along the Atlantic coast or along the sides of stream valleys. The shales are also encountered in coal-mining operations, especially when cross-cutting the measures from one coal seam to another.

CLAYWORKING INDUSTRY

A very complete description of these shale beds, accompanied by the results of physical tests on samples collected from them, is given in the report on "Clay and Shale Deposits of Nova Scotia," by Messrs. Ries and Keele, and published by the Department of Mines. (See also Mines Branch Memo. No. 5 "Pottery Clays in Canada," J. Keele, 1922.)

All of the shale beds in the Carboniferous measures are plastic when ground and worked up with the required amount of water, and consequently can be formed into ware of any desired shape.

The list of ware that can be made from these shales includes common building brick, face brick, hollow building tile, sewer pipe, electric conduits, floor tile, roofing tile, paving brick, firebrick, stove linings, garden urns, chimney flues, etc.

While none of the beds in the Carboniferous measures are highly refractory, except in one instance at Inverness, there are several beds of semi-refractory shales in the Pictou coal field which are extremely useful in the steel industry for the manufacture of sewer pipe or other vitrified wares. A company has been recently incorporated to develop a deposit near Sunnybrae in Pictou county for the manufacture of fireclay products.

The real fireclays in Nova Scotia are seldom found in the coal measures, but occur as soft beds of Cretaceous age at the localities given above. These clays are also used in the manufacture of stoneware goods.

One of the best refractory materials in the province is not a clay at all, but a hard rock known as felsite, a large deposit of which occurs at Coxheath not far from the city

of Sydney. This material when crushed to the proper size and bonded with plastic fireclay makes a fair grade of refractory brick. The southwestern part of the province between Halifax and Yarmouth appears to be lacking in clays either of the hard or soft variety.

At several points in the province there is a material of peculiar interest, known as infusorial earth. This is a very fine grained siliceous deposit of organic origin and has many uses in the industries. Its chief use in the clayworking industry is in the manufacture of insulating brick, which is used to great advantage in conserving heat in furnaces. (See Diatomite, p. 42.)



Partridge Island and Cape Blomidon

In addition to the clay resources, there are still other materials which are included under the general head of ceramics, one of the most important of these being silica rock. There are extensive beds of quartzite in Cape Breton, which contain over 95 per cent of silica, and are found to be suitable for the manufacture of silica fire brick.

Silica brick is a very important item in metallurgical and by-product coke-oven practice, and a large quantity of this expensive product is imported into Canada every year. It is now being manufactured by the Dominion Steel and Coal Corporation.

The vast and varied resources of clays and shales in the province of Nova Scotia have been little developed up to the present. Timber has hitherto been cheap and plentiful, and in some localities has been used for all structural purposes. As far as structural materials are concerned, the clayworking industry of Nova Scotia is confined at present to the manufacture of red brick and hollow

building tile from surface clays and also red brick from shale. Face brick as well as common brick is produced. A certain amount of bricks of other colours is imported at present, but this importation might be displaced by the production of bricks from some of the shales of the Pictou coalfield.

Hollow building tiles and fireproofing materials are now made in Nova Scotia and are used extensively. They are cheaper to build with than brick and make excellent walls in dwellings for withstanding extreme changes of temperature.

A small quantity of field drain tile is made at the brick plant at Avonport in King's county. Most of the surface clays mentioned in the report of the Department of Mines are suitable for the manufacture of agricultural tile.

Firebrick for lining the ladles used in the steel works were at one time manufactured from the semi-refractory shales which are mined with the coal at Westville. These bricks are hard and dense in structure and give better satisfaction for ladle linings than a more refractory brick. Firebrick is used in many cases where a less refractory brick would do, so that the shales at Westville could be made into brick for many purposes where high refractoriness was not the only thing to be considered.

It is possible that some of these shales could be used for the manufacture of architectural terra-cotta, a material that is steadily increasing in use as a facing for business buildings in cities. This class of clay ware is not made to any great extent at present in Canada.

Red and buff floor tiles and roof tiles can also be made from these shale beds to replace the large quantities imported from Great Britain and the United States.

So far as can be ascertained, pottery manufacture has never been attempted in Nova Scotia, except by small plants at Enfield and Middleton which made ordinary red flowerpots from the surface clay in its neighbourhood.

There are excellent stoneware clays at Shubenacadie and Middle Musquodoboit. At Saint John, N.B., the clay from the latter point is used for making tea pots, bowls,

jars, crocks, etc., and is found very suitable for the purpose. Until a few years ago the firm obtained its clay from New Jersey.

The tourist trade of Nova Scotia offers a good opportunity for the manufacture of clay wares for souvenir purposes. Many visitors would gladly purchase small pieces of clay ware if they were of local manufacture, made from local materials, and had some distinctive qualities besides.

Several experiments have been made at the Ceramic Laboratories of the Mines Branch at Ottawa on the suitability of some of the clays of Nova Scotia for modelling and pottery-making. It was found that some of the stoneless brickclays of the Annapolis valley will make good red ware, which can be enamelled with the ordinary majolica glazes.

The clays of Shubenacadie and Musquodoboit are excellent modelling clays which could be used for instruction work in technical schools and for making the finest kind of glazed art pottery.

A deposit of hard white clay has recently been located near Middleton, which may at times find use in the ceramic industry.

At Middle Musquodoboit splendid exposures of bright red, grey, black and white clays occur at points on the newly completed railway grade, and in the banks of the river, as far east as Elmsdale. There is no doubt that these clays underlie the valley for several miles, although they are almost wholly concealed by glacial drift. Red or rose coloured clays seem to predominate near Middle Musquodoboit.

Seven brick and other clay products plants are listed in the Nova Scotia Mines Report for 1928, 3 in Pictou county, 2 in Hants, and 1 each in Cumberland and Kings. The products are bricks, fire-brick, sewer-pipe, land-tile, hollow building-blocks, chimney-tops, stove and flue linings.

FORESTRY

The total area of the province, including lakes, is 21,428 square miles, of which forest land is estimated to be 15,220 square miles.

	Forest land			Agricultural land	
	Pro- ductive	Unprofit- able and inac- cessible	Total		
	sq. m.	sq. m.	sq. m.		sq. m.
Conifers.....	6,218	2,880	9,098	Total.....	7,813
Broadleaved.....	4,078	2,044	6,122	Forested.....	4,946
Total.....	10,296	4,924	15,220	In use...	2,867

The forest area classified under “unprofitable” consists mostly of fire barrens, natural barrens, and bogs.

It is estimated that nearly 5,000 square miles of land at present forested have agricultural possibilities. The



Logging with Oxen

2,867 square miles classified here as agricultural land in use consists of 1,550 square miles under cultivation and 1,317 square miles of pasture land. The pastures in Nova Scotia are largely covered with young forest, consisting mostly of either scrubby birch and red maple or often of excellent white spruce. A great part of this pasture area will no doubt revert to forest. The land classified as "productive" includes the timber growth which carries not less than 2 cords an acre of merchantable timber.

The estimates of the forest resources of Nova Scotia were within the last few years revised with a view to the Imperial Forestry Conference in Australia and the figures were stated thus:—

	M ft. b.m.	M cu. ft.
<i>Saw Material—</i>		
Softwood.....	7,145,000	1,564,755
Hardwood.....	3,325,500	728,284
	10,470,500	2,293,039
	M cords	M cu. ft.
<i>Pulpwood, Cordwood, Poles, etc.—</i>		
Softwood.....	16,335	1,911,195
Hardwood.....	20,172	1,918,340
	36,507	3,829,535
		M cu. ft.
<i>Total Stand—</i>		
Softwood.....		3,475,950
Hardwood.....		2,646,624
		6,122,574

Besides the above mentioned productive stands the province contains about 4,300 square miles of young forests. Natural reproduction is abundant and owing to the favourable climatic conditions growth is rapid so that, given protection from fire, there is no part of the Dominion which offers better opportunities for permanent forest production.

Though forest fires have destroyed immense quantities of both merchantable timber and young growth, the awakening of public realization to the value of the forest and the greatly improved protective organization have already appreciably reduced the extent of fire losses. The country is well provided with roads and railroads; every

part of the province can be reached by railway or motor truck. Through the whole country the forests are interspersed with small settlements where the population subsist through farming in the summer and lumbering in the winter. The same ideal conditions as found in Sweden are therefore to hand in Nova Scotia. Trained labour for the woods can be found everywhere, and because of these scattered settlements the suppression of forest fires is much easier than in the less densely populated parts of Canada. Every settlement acts as a forest ranger station from which place fire-fighters can quickly be brought to the scene of the fire.

FIRE PROTECTION

A person is liable to a penalty of not less than \$20 nor more than \$400 for each offence if he starts a fire near the forest or for the purpose of clearing land without exercising every reasonable care and precaution; or if such person, between the fifteenth day of April and the first day of December, starts a fire in or near the woods for cooking purposes or any other purpose without observing certain prescribed precautions; or starts a fire for the purpose of clearing land or other like purpose without first having obtained a permit in writing from a duly appointed forest ranger; or operates a steam engine within sixty rods of any woods without first having obtained a permit from a duly appointed forest ranger.

Whenever slash or debris, likely to cause a fire hazard, is found near public highways or railways, the minister may, upon the report of the chief forester, order the owner or person in control of the land to remove such fire danger; and in default thereof the chief forester may enter upon such land, with such assistance as he may deem necessary, for the purpose of removing the danger. The cost of such work shall be borne and paid by the owner or person in control of the land and shall be recoverable in any court of competent jurisdiction.

Unlike other provinces, the Government of Nova Scotia early adopted the policy of disposing of timber and land at a price per acre, the object being to encourage settlement of the country, no matter whether farm or forest land was taken.

Some large operators and corporations have acquired and combined numbers of smaller grants and, at present, probably little less than half the timbered area is owned in large holdings of 10,000 to 250,000 acres in extent, the other, and larger half being owned in holdings which rarely exceed 1,000 acres.

In order to safeguard the interest of the people an Act was passed in 1930 prohibiting any owner or occupant of forest land, of one thousand acres or more, from cutting any tree on his property without first having obtained a licence from the minister. The licence may be for such period and in respect of such trees, and subject to such terms and conditions as the minister deems proper. Every person who violates the Act is liable to a penalty of not less than five hundred dollars nor more than five thousand dollars, and the wood cut may be confiscated. The Act which is a section of the Land Tax Act, only comes into effect when the Governor in Council orders and declares so by proclamation.

The Attorney-General of the province is also the Minister of Lands and Forests, and under his supervision, direction and control is the management, leasing, sale or other disposition of the Crown lands; the surveying and recording of all forest and wild lands; the conservation and protection of all forest and timberlands, whether the same are Crown or privately owned; and the protection, preservation and propagation of game and game fish.

To assist the minister, and under his direction to perform these duties, is appointed a chief forester, who also is chief scaler and chief provincial land surveyor. The chief forester is a technically trained forest engineer.

The chief forester is chief of the forest ranger service. The province of Nova Scotia is divided into six chief forest ranger districts, each district comprising about 3,000 to 4,000 square miles.

The chief forest rangers are experienced woodsmen who, for a number of years, have been occupied in the lumbering business as superintendents and chief scalers. They have, during their term of office, received considerable training in surveying, cruising, and general forestry, including reforestation, growth studies, forest entomology and pathology.

Each forest ranger district is divided into from eight to ten sub-ranger sections, each section comprising about from 300 to 500 square miles. The sub-rangers are practical woodsmen, recruited from the ranks of camp foremen, scalers or guides. They have also, during their term of office, received considerable training.

The department is operating a forest nursery at Lawrencetown, managed by a technically trained forester who also has charge of the reforestation work throughout the province.

Nursery stock is provided free of cost to any citizen of the province upon application, from the provincial forest nursery. The chief forester is available to any citizen of the province who might require his services for expert advice.

WOOD-USING INDUSTRIES IN NOVA SCOTIA

The provincial Forest Service co-operates with the Dominion Bureau of Statistics in the collection of data regarding the wood using industries.

Chief among these is the lumber industry. In 1928 there were 352 mills, with a production of 114,912 M ft. b.m. of lumber, 54,858 M lath, and 16,618 M shingles.

Next in importance of the forest products is the pulpwood for export. Since 1915 the increase in the amount exported has been fifty-fold. In 1915, 3,310 cords were exported; in 1920, 27,211; in 1925, 94,340; in 1926, 103,954; in 1927, 175,693 cords, in 1928, 162,695, and in 1929, 143,608. In 1929, there were six pulp mills in operation, all of which were ground-wood mills. The production was 32,625 tons and the total amount of pulpwood used was 39,379 cords, mainly spruce with some balsam fir. These figures will be greatly changed in the year 1930 owing to the establishment of the Mersey Paper Company's large paper mill near Liverpool which began production in December, 1929. This mill, having a daily capacity of 250 tons of newsprint, will utilize at least 150,000 cords of pulpwood annually.

Next in importance to the pulpwood industry comes the wood used in the coal mines of the province. Fifty thousand cords of spruce and balsam are used annually in coal mining operations for pit props, ties, etc.

Besides these three main industries there are in Nova Scotia some 130 secondary industrial establishments depending on forest material. Specially noticeable are boat building (18), cooperage (33), boxes (10), furniture (100). These secondary industries furnish employment to more than 1,000 people, and have an annual output value of more than \$2,250,000.



Nova Scotia Timber as Used in the Coal Mines

(For full details as to commodities manufactured from the various woods, and the special woodworking industries of Nova Scotia, see "Wood-using Industries in Canada, 1926-27" published in 1930 by the Forest Products Division of the Dominion Bureau of Statistics, Ottawa.)

The wonderful hardwood resources of the province are very little exploited, their main use at present being for fuel wood for which purpose about 570,000 cords are cut each year.

Though the lumber industry is still the most important forest industry in the province it has had to meet severer competition since the opening of the Panama canal in 1915.

While formerly only 20 per cent of Canada's lumber production was derived from British Columbia, the output from that province is now more than 50 per cent.

To a certain extent this is a result of the opening of the Panama canal which makes it possible for British Columbia to compete successfully in the markets of the South American coast, the West Indies and the Atlantic coast of North America, where previously Nova Scotia sold large quantities of lumber.

As an offset to these conditions it is important in the interest both of Nova Scotia and also for Empire trade development to pay special attention to the British market. The Imperial Economic Commission in 1928 showed that the British Empire supplied only 6 per cent of the softwood imported into Britain and that a percentage quite equal to this was imported from the United States of America. The bulk, or 80 per cent of the imports, comes from Northern Europe and the Baltic, where the exporters have long made a special study of the careful grading, sizing and marking required by the trade in Great Britain.

It is earnestly hoped that the lumbermen of Nova Scotia will follow up the far seeing suggestion made by the chief forester of the province and combine to send an agent to study the market conditions in Great Britain with a view to securing for Nova Scotia a larger share in this trade.

PHYSICAL CONDITIONS

The composition of the forest varies mainly according to differences of soil, climatic differences being too small except on the plateau of Cape Breton and on the higher mountains, to have much effect.

The province can be divided into three regions, namely: the southern (Atlantic) slope, the northern slope—two areas of equal extent constituting the mainland—and Cape Breton island.

The Atlantic slope is located on granite, quartzites and slate, besides glacial deposits, and is topographically much diversified, with hills and dales, lakes and swamps. Three-eighths of the western part of the peninsula, or 3,000 square miles, and only 550 square miles on the eastern part of the peninsula, are granitic, more or less disturbed by

glacial action. While, on account of rocky conditions, this granite area does not often furnish good farming ground, it furnishes good forest soils, especially where sorted by glacial movement. The thinner soils on the ridges are usually covered with coniferous growth, mainly fir; the slopes, with mixed growth; the gentler slopes and bases, with spruce and hemlock. Occasionally barrens, natural or fire barrens, and swamps are encountered.

The quartzite areas which enclose the centrally located granite area are formed of less easily disintegrating, harder rock, and give rise more frequently to barrens; while the slate formation and the deeper glacial deposits in the valleys are the farm country, or support the better character of forest growth. These two formations cover about the same extent in the western counties as the granite, but in the eastern counties the quartzite areas far exceed both the granite and the slate formation, and hence the growth conditions, are, as a rule, less favourable.

The glacial deposits generally bear the best forest growth, but, even in these, when too coarse and overdrained, conditions are occasionally found favouring barrenness.

The northern slope, or drainage basin of Northumberland strait and Minas basin, although simpler in topography, is geologically, and hence as regards soil and forest growth, much diversified, being composed not only of igneous (felsites, syenites, diorites) and metamorphic (schists) rocks, but also of sandstones, slates, conglomerates, limestones, and, to a smaller extent, glacial drift. Not only more and better developed hardwoods growth, but more luxuriant forest growth generally, is found here.

Cape Breton island can be subdivided into two distinct sections, the southern part, an undulating plain, and the northern part, a high plateau, with very little topographic differentiation except in the northern part, where it is broken up by hills.

THE TREES OF NOVA SCOTIA

The trees that make up the bulk of the forests in Nova Scotia are:—

RED SPRUCE (*Picea rubra*), confined in Canada to Nova Scotia, New Brunswick and eastern Quebec. This is

the principal lumber tree of the province, and is of larger growth in moist and well drained situations. It is stronger and more durable than white spruce and its fine grain, texture and reddish tinge give it special value for interior finish. It is also a valuable pulp species.

WHITE SPRUCE (*Picea canadensis*) is less abundant than the red, but is found in the coastal districts, especially



Loading Lumber at Pictou

in Yarmouth and Digby counties, and on the Canso side of Guysboro county. In Canada as a whole it is abundant and very widely distributed. Owing to its long, tough, colourless fibre and comparative freedom from resin, it is the most valuable pulpwood species in Canada. The wood is also extensively used for lumber and to some extent for cooperage, mine props, ties, masts and spars.

BLACK SPRUCE (*Picea mariana*).—In eastern Canada this tree is confined mostly to swamplands. Owing to its comparatively small size it is of less value for lumber than

the other spruces, but is largely used for pulp, mine timbers, ties and cooperage.

WHITE PINE (*Pinus strobus*), largely second growth in Nova Scotia, is found mainly in Queens and Shelburne counties. This is the highest priced of the pines. The wood is soft, white and easily worked and, where available, it can be used in every part of building construction and in nearly every wood-using industry.

RED PINE (*Pinus resinosa*) is found in Lunenburg and Queens counties and generally on sandy plains. It is used for lumber, masts, spars and deck plank, and especially for car construction, paving blocks and water tanks.

JACK PINE (*Pinus banksiana*) not abundant, but occurring on poor sandy soils, especially in Colchester county.

BALSAM FIR (*Abies balsamea*), misnamed "white spruce" in Cape Breton, is found in all parts but especially on Cape Breton island. It is valuable for pulpwood and for cheaper grades of lumber.

HEMLOCK (*Tsuga canadensis*) is found chiefly in Annapolis county and in the interior of Digby county, forming 60 to 70 per cent of the uncut stands. It is especially suitable for under-water and rough construction and for other purposes in which its coarse and splintery qualities can be disregarded. The bark is a source of tannin.

CEDAR (*Thuja occidentalis*) is native but not abundant. It is valuable for boat building and is used for fence posts, telephone poles and shingles.

LARCH (*Larix laricina*), called also tamarack, hackmatack and locally "juniper" is found in swamps with black spruce. The wood was, when plentiful, greatly valued for shipknees and trenails, and is well adapted for pumplogs, tanks, and vehicles. The old growth has been destroyed by the sawfly, but young growth is not uncommon.

BEECH (*Fagus grandifolia*), the most abundant of the hardwoods, is more common in the west of Nova Scotia than the east. It is used for flooring, tanks, vehicle stock, cooperage, handles, and wood distillation.

MAPLES.—The *Acer saccharum* or sugar maple is the more widespread of the two principal maples found in Nova Scotia. The red maple (*Acer rubrum*), also called "soft maple," is less valuable, even for lumber. The maples

are the most abundant of the hardwoods in the Maritime Provinces next to beech.

YELLOW BIRCH (*Betula lutea*) is the most valuable hardwood in the province, and grows more abundantly in the eastern counties than either beech or maple.

The last two hardwoods are also staple woods for flooring, car construction and furniture.

PAPER BIRCH (*Betula alba*), or white birch, is common on burned-over areas. Besides its traditional use for the birch bark canoe, it is in general use for small woodenware, such as spools, clothes pins, etc.

RED OAK (*Quercus rubra*) is comparatively scarce in the province, but the species could be used in reforestation to advantage; of that in use in the Maritime Provinces, 75 per cent is now imported.

BURR OAK (*Quercus macrocarpa*) is the only other commercial species of oak in Nova Scotia. It is hard and tough and useful for axe and pick handles, flooring and interior finish.

POPLAR (*Populus tremuloides*) or aspen is one of the first trees to appear in burned over areas, its light tufted seed being carried long distances by the wind. This species is used for excelsior, match sticks and berry boxes. Much is also used for pulp, as is the large-toothed poplar (*Populus grandidentata*). The only other native species of poplar in Nova Scotia is the balsam (*Populus balsamifera*), whose uses are similar to those of aspen. Poplar is used extensively for the manufacture of book, writing and other fine papers.

ASH. The white (*Fraxinus americana*), and black (*Fraxinus nigra*) species are the only varieties in Nova Scotia of the four found in Canada. Neither are at all common at the present time.

WHITE ELM (*Ulmus americana*), BLACK CHERRY (*Prunus Serotina*), and IRONWOOD (*Ostrya virginiana*), also called hornbeam, are native in Nova Scotia, but do not occur in large quantities.

LANDS AND FORESTS ACT

All provincial legislation regarding the forest and game is governed by an Act passed in 1926, called the Lands and Forest Act, supplemented by the Act of 1930.

This Act is divided into three parts, namely: Crown Lands, Forests, and Game.

Under Part I is found all the legislation dealing with surveying, granting and leasing of Crown lands.

GRANTS

Crown land can only be granted to applicants of not less than eighteen years of age, desiring the land for their own benefit and for the purpose of actual settlement, and for agricultural or grazing purposes. The price of such land is \$1 per acre in addition to the expense of surveying. The applicant only obtains a grant of the land if he, two years from the date he has taken possession thereof, has built a house thereon; has resided upon the said land for not less than three successive years; and has cultivated not less than ten acres of land thereof.

LEASES

Crown land may be leased if the land is of inferior quality, and if the person proposing to lease same undertakes to expend money in draining, diking or developing such land. Lands may also be leased if the person proposing to lease same undertakes to expend money in the erection of mills and machinery for the manufacture of wood products or pulp. Grants and leases are signed by the Governor-in-Council.

CUTTING LICENCES

The Minister of Lands and Forests may grant licences to cut timber on the ungranted land of the Crown, on payment of such dues as may be in his discretion. The cutting licences are subject to regulations and restrictions prescribed by the Governor-in-Council.

The department issues an annual report and has issued a bulletin for the treatment of the farmer's woodlot, and a bulletin for instructing the school teachers and older pupils in forestry.

The revenue and expenditure of the department for the year 1929 was as follows:—

REVENUE

Royalty, dues and stumpage bonuses.....	\$ 4,732.44
Licence fees and ground rent.....	21,551.52
Trespass penalties.....	3,729.50
Land tax on privately owned timberland.....	90,944.17
Fire protection tax.....	27,181.86
Game and fur.....	34,630.33
	<hr/>
	\$ 182,769 82

EXPENDITURE

Crown lands, administration and surveying.....	\$ 18,757.06
Game protection.....	44,798.03
Fire protection.....	75,495.62
Land tax (collection).....	514.03
Reforestation and thinning.....	5,742.81
	<hr/>
	\$ 145,307 55

AGRICULTURE

There is abundance of fertile land in Nova Scotia for general farming, and especially for the small holdings which should supply the needs of the larger towns, the manufacturing and mining centres and the summer visitors from the crowded cities of the United States. With the exception of the Annapolis valley, or "Garden of Nova Scotia," and the dyked, or reclaimed, lands which have since 1636 been a feature of the province, there are no wide or continuous stretches of cultivated soil. Nor are there any large rivers with rich and broad valleys, but there are a hundred smaller rivers and streams, the intervalles of which give fertile soil in the slate as in the richer limestone formation. In the seven northern counties, including Cape Breton island, conditions of soil, climate and topography have resulted in a greater proportion of good land and therefore of wider clearings than on the Atlantic slope. In these southern and western counties one of the most fertile intervalles is that of the Musquodoboit river, the upper branches of which run through a limestone formation. This valley has been opened up by an 80-mile extension of the Canadian National railways to a point 40 miles east of Halifax. In the slate formation there are rich intervalles, such as the Tusket valley, between Kemptville and the sea, and the valley of the lower Sissiboo. As a rule, however, the cultivated land in these counties lies along the seaboard,

for the interior granite areas do not invite settlement. The uplands of the province with their moist climate and good pasturage provide, according to a report of a Scotch commission, a million acres admirably adapted for sheep ranges. For all young stock the natural grass and clover will continue to be an economic source of feed.



Dykelands of Nova Scotia

*Dykelands.*¹—The greatest gift of the tides to Nova Scotia, whether judged by size, money value or scenic beauty, is the salt marsh country of Acadia. The dykes were first used in 1636 to control the salt tides. Because of their inexhaustible fertility and the ease with which they can be cultivated, these lands will continue to be the most highly-prized farming districts of the province for many centuries.

There are 15,000 acres in Nova Scotia and 60,000 in New Brunswick. If degenerated by over cropping, bog growth or neglect of drainage, they are easily regenerated; the dykes are broken at convenient places and the tide allowed to flow in at will; the salt water kills bog vegetation at once and in 2 to 3 years covers the entire marsh surface

¹ Goldthwait, J. W., Geol. Surv. Mem. 140, p. 134.

with a thick layer of new mud. The dykes are then rebuilt, ditches are opened, and the vegetation goes through the usual cycle till in 2 to 4 years the land is again bearing rich English hay.

The marshes were first reclaimed in 1670 and occupied by these Acadian French until 1755. After a period of 5 years, they were again used by Acadians who had returned to this district and by settlers from New England. Some dykelands are known positively to have been cultivated for 75 years with no renovation and probably from 100-150 years before that.

Western cattle might well be fattened on those rich pastures and shipped in prime condition to the English market. Cattle do not lose condition on the ocean trip. In 1925 it cost \$45 to ship a steer from Alberta to Liverpool; \$20 from Halifax.

Prices of Farm Land.—Occupied farms, including improved and unimproved land, houses and farm buildings, had an estimated value in 1929 for Nova Scotia of \$37 per acre. Prices vary greatly according to location, soil, and nature of use; in 1920 the average prices were as follows:—

In mixed farming counties (Colchester, Cumberland, Pictou, Antigonish, and parts of Hants), cultivated land ran from \$20 to \$100 per acre.

Mature orchards in good bearing \$300 to \$500.

Fruit counties (Annapolis, Kings, Hants), from \$60 to \$200.

Dyked marsh land (bay of Fundy and Minas basin), from \$80 to \$300.

Fruit lands in the sand belt, from \$25 to \$40. (Cost of producing bearing trees beings total price up to that of the naturally good land.)

“Intervale” land in any county, from \$30 to \$100.

Pasture land (rough cut-over timber land), \$5 to \$20.

Woodland, \$4 to \$10.

The average price of farm land in Nova Scotia is raised by the large proportion of valuable fruit farms. Improved farms however are still to be had as low as \$20 to \$25 an acre.

In 1921 there were 47,432 occupied farms with a total acreage of 4,723,550. In 1901 there were 52,491, with acreage 5,260,455. Of these farms all but 5 per cent were under 300 acres, and 68 per cent were under 100 acres.

Pasture, Hay, and Roots.—Of the land in agricultural use in the seven southern counties, about 60 per cent is pasture; in the seven northern counties, and also in the four counties of Cape Breton island, 50 per cent.



Clover in the Annapolis Valley

For beef and dairy cattle and for sheep, hay and roots are essential, and the climate of Nova Scotia has the moisture as well as the sunshine needed for their growth. Clovers, red, alsike, and white, grow abundantly, and certain varieties of hardy alfalfa are coming into use. The Nova Scotia Agricultural College has experimented with the various alfalfa seeds and find that "Grimm" and "Ontario variegated" passed the test of the severe winter of 1916-17.

Turnips in 1921 on several farms ran 1,200 to 1,400 bushels to the acre, the estimated average of 509 for the province pointing to the value of scientific production.



Hilling up the Potatoes

Yarmouth has a reputation for good Swede seed, and at the Dominion Experimental Station at Kentville a small quantity of selected turnip seed is grown. Potatoes are largely grown in the Annapolis valley for export to Havana.

SHEEP AND WOOL

The sheep industry in the province is about 300 years old, records of 1693 telling of 173,271 sheep in Acadia. In 1929 Nova Scotia ranked fourth among the provinces in the number of sheep and lambs with 277,761. To the estimated total Canadian wool clip of 21,234,000 pounds, Nova Scotia contributed 1,594,000 pounds. The price for Canada was 21 cents a pound, compared with 60 cents in 1918, 1919. The price for Nova Scotia wool, which, if sold through the Co-operative Wool Growers was 33 cents a pound in 1928 and 29 in 1929, is always above the average for all Canada, but the clip per sheep is usually below. All the coarse large wool breeds, such as Leicesters, Lincolns and Cotswolds do well in Nova Scotia and also the medium wool breeds such as Shropshire, Hampshire, Cheviot and Southdown. The climate on the mainland demands shelter for sheep for the winter months, though on certain islands along the south shore they are out all the year and feed on the sea kelp washed up on the shore. These were at first the wild sheep descended from those brought in by early settlers. Enterprising farmers on the south shore, seeing that they fed off kelp in winter as cattle do in Alaska, use nearby islands as sheep corrals. In Nova Scotia, so far, small flocks of from 15 to 75 have been the rule, but with the million acres of good pasturage available, often with white clover growing naturally, the tendency is to put the industry on a wider basis. With a view to improve the breed of sheep, the federal and provincial Governments co-operate to provide for the farmer young ewes and rams of selected stock at prices little higher than those paid by the butcher. In 1923 six pedigree rams were imported from Britain at a cost of about \$200 each, one-half of the expense being paid by the new owners, and one-half by the Dominion Government. Nearly 35 per cent of the sheep are found in the three neighbouring counties of Inverness, Antigonish and Pictou. Legislation imposes a tax on dogs

and provides compensation by the owner of the dog or by the municipality for loss of sheep injured by dogs. Two annual payments of \$5 are made to any sheep owner with a ewe flock of ten or more who purchases a pure-bred lamb for the first time. Co-operative marketing of sheep and lambs under the auspices of the Live Stock Branch of the Dominion Department of Agriculture has considerably increased the farmers' profit. Grading of pure-bred rams has also been welcomed.



Sheep and Lambs on a Nova Scotia Farm

As weed eradicators and particularly of ragwort, which is the source of the fatal Pictou cattle disease, sheep can perform a very valuable service in those parts of Nova Scotia bordering on the Northumberland straits (see "Sheep Husbandry in Canada," Dept. of Agric. Bulletin No. 75).

The Co-operative Wool Growers.—In 1911 the sheep Commission appointed by the Minister of Agriculture regretfully reported that "from shearing to marketing no

country in the world handles its wool in a worse manner than Canada." This is not so to-day. Dominion wool is now intelligently sheared, packed and sorted. In 1923 Canadian wool was for the first time successfully marketed in England.

In 1914 the Sheep Division of the Agricultural Department was organized and, throughout the Dominion, wool growers' associations were formed to produce,



A Nova Scotia Farm Team

classify and market good wool. In 1918 the Co-operative Wool Growers, Ltd., was incorporated, with head offices and large warehouses in Ontario. This is a growers' organization, owned and controlled by the sheepmen, to which are affiliated most of the wool growers' associations. Of these there are several in Nova Scotia with grading stations at Truro, Antigonish, Port Hood and elsewhere.

Pure-Bred Live Stock.—Provision is made by the Dominion Government for the supply of pure-bred sires in cattle, sheep and swine to associations of ten or more farmers who unite and comply with a few simple regulations. (In all Canada there are about 2,000 such associ-

ations, in Nova Scotia 29.) The increase of such associations has improved the breeds of live stock in certain districts where they had shown a tendency to deteriorate. Pure-bred cattle increased from a percentage of 8.05 per 1,000 head in 1911 to 19.52 in 1921.

Horses.—With the coming of the “car,” light horses in Nova Scotia are not so much in request, but draught and delivery horses are much needed in the cities. In Nova Scotia much is being done to improve the heavy breeds, such as Clydesdales and Percherons.

In 1929 there were 50,929 horses and not enough being bred to keep up the supply. An Act of 1913 provides that every stallion offered for service in the province must be enrolled with the Department of Agriculture. In 1921 there were 432 pure-bred horses compared with 359 in 1911.

Cattle.—Beef and dairy stock in Nova Scotia amounted in 1929 to 286,406 head, so that there is room for a very large increase. For beef, Herefords, Angus and Devons all do well; for dairy purposes, Jersey and Guernsey, Ayrshire, Shorthorns and Holstein.

Hogs.—Nova Scotia in 1929 had barely one per cent (47,458) of the swine in Canada, and only 14.64 per 1,000 in 1921 were pure-bred. As a consumer of the separated milk returned from the creameries and of garbage otherwise wasted, the hog is a money-maker all the time. Yorkshire are considered the best bacon pigs for the province.

THE DAIRY INDUSTRY

Dairying can be extended indefinitely, but the fact remains that the number of milch cows in 1929 was only 141,207, compared with 152,000 in 1911. The average production per cow is, however, higher than then, though the yield of butter fat per cow is still too low.

The present number of cows in Nova Scotia has been slightly affected by the recent export of many carloads of good cows to Ontario, the U.S.A., and the West Indies. Such export creates interest in the breeding of higher grade dairy stock, which is to the ultimate advantage of the dairy industry, though diminishing for a time the high-producing stock in the province.

Cow testing associations, heifer and calf clubs are all doing good work to improve milking stock. A Holstein

cow at the Truro farm had a recent record of 67,342 pounds of milk with 2,649 pounds of butter fat in the three consecutive test periods of 305 days each.

Owing to a larger demand for sweet cream and milk, and especially ice cream, in the towns and for the tourist trade, the progress of the dairy industry cannot be fairly measured by the total amounts of creamery butter and cheese made from year to year. In 1929 there were 30 creameries of which three were operated by the provincial



Shorthorns at Dominion Experimental Farm, Kentville

Government. The total production of creamery butter was 4,254,379 pounds. In 1911 there were 10 creameries and the production was only 256,420 pounds. Though a large percentage of Nova Scotia butter is made on the farms, the number of creamery patrons has yearly increased to 10,137 in 1929.

Cheese-making, other than domestic, has decreased almost to the vanishing point, as farmers find delivery at the creameries better suited to their needs. In 1929 the Malagash cheese factory, producing 18,867 pounds, was the only one operated.

The Government railways provide a weekly refrigerator car service for butter, of which shippers can forward any amount from a one-pound package up, being guaranteed a certain proportion of the carload value. The butter must be inspected at Halifax.

With the growth of co-operative ideas, and knowledge of up-to-date methods, admirably fostered by the work of the Nova Scotia Department of Agriculture, the province should be able not only to supply its own demands and contribute to those of the Dominion, but to ship in larger quantity to Britain, which consumes yearly five hundred million pounds of imported butter. Before the war, weekly train loads of butter were collected in Siberia, sent by rail to Riga, and thence by water to England, where it was sold as Danish butter.

Eradication of Bovine Tuberculosis.—The general tuberculosis testing of cattle in Nova Scotia under the Restricted Area Policy of the federal Government began on September 8, 1927.

The benefit accruing to the province may be seen by the latest Restricted Area Figures recorded at Ottawa:—

Initial Test	Reactors	Compensation paid by Dominion Government
		\$
September 8, 1927, to December 21, 1928.....	4,296	146,668
Retests to December 21, 1928.....	339	11,898
Tests and retests, December 21, 1928, to October 1, 1929.....	71	2,713

Cold Storage.—The Nova Scotia Public Cold Storage Terminals were opened at Halifax in 1929. Cold storage facilities at harbours and on ships are a first need in view of the expansion of the trade with Europe in butter and eggs, fish, fruit and other perishable products.

Poultry and Eggs.—Here again the demand is still greater than the supply. One of the difficulties has been the cost of feed, now mostly imported into the province at more than double the cost of a few years ago. The manufacture of poultry food from fish waste would do much to

help, and the Poultry Branch has aided in supplying buckwheat seed for any spare land the householder may have. Co-operative egg circles collect the eggs and market them at top prices. The 37 circles in 1929 collected 393,646 dozen eggs. The industry is also aided by poultry clubs and shows and by the erection of demonstration houses at various points as models for the poultry-keeper. Total production, 1928, 4,426,833 dozen, value \$1,372,318.

NUMBER OF LIVE STOCK IN 1929

Horses.....	52,104
Milch cows.....	141,207
Other cattle.....	145,199
Sheep and lambs.....	277,761
Swine.....	47,458
Poultry.....	1,114,171

Live Stock Prices

	1919	1929
Horses.....	\$127	\$102
Milch cows.....	76	59
Other cattle.....	54	38
Sheep.....	11	7
Swine (per 100 lbs.).....	29	19
Poultry in 1929—Total value.....	\$1,168,000	

Bees.—The honey now made in Nova Scotia is not beyond the demand of the local markets, but there is no reason why the abundant native flora, fireweed, clover, etc., to say nothing of sown crops such as buckwheat and the blossoms of all varieties of fruit, should not produce a yield for export to the unlimited market outside. The advice of the Government specialist can be had for the asking. In parts of the Annapolis valley and in Cumberland county bee-keeping is already an industry; to ensure pollenization bees are a necessity to the orchardist, but poisoning by spray dust is to be guarded against. The industry requires little capital, and should prove in Nova Scotia as profitable as it now is in Quebec. The yield of surplus honey in six years from the Nappan Experimental Station was exceeded only by that from Ottawa. The yield at Nappan in 1927 was 72 pounds to each colony.

No less than 22 per cent of the bees are still kept in old-fashioned box hives with no moveable frames. This makes the control of disease difficult and cuts down production. Again, bee-keepers are too apt to stint the supply of honey left for the winter store after extraction. Consequently in the spring, if the bees are not all dead, they are

in a dwindling condition and do not produce a surplus of honey in the coming season. Italian bees seem better suited to the province than Black or Hybrid. There is a "Maritime Bee-Keepers" Association, of which Mr. Alex Clegg (Amherst) is vice-president for Nova Scotia.

In 1929 there were 267 registered bee-keepers, producing 55,181 pounds of honey from 1,466 colonies, averaging 37.6 pounds a hive.



A Bee Farm near Kentville

Maple Sugar.—Though 94 per cent of the Canadian production is credited to Quebec, it is not the absence of sugar maple trees that is to blame for the very small production of Nova Scotia. Production, 1929, 106,242 pounds.

Under the Act of 1864 for Encouragement of Agriculture, agricultural societies increased in number every year (except 1919) for 58 years up to a maximum of 272 in 1920. There were 184, with a membership of 6,992, that qualified for sharing the provincial Government grant in 1929. There were 15 county and district farmers associations in 1929.

FIELD CROPS

The area (1,011,144 acres), yield and value (\$63,357,000) of the field crops of Nova Scotia reached this peak in 1919 but are now normal after a fall of 29 per cent in acreage and 70 per cent in money value.

ACREAGE YIELD, PRICE AND VALUE OF FIELD CROPS IN NOVA SCOTIA FOR THE YEAR 1929

(Figures obtained from the Dominion Bureau of Statistics)

—	Acreage	Yield	Price	Value
		Bushels	Per Bushel	
			\$	\$
Spring wheat.....	6,056	111,000	1.84	204,000
Oats.....	109,836	3,647,000	0.80	2,918,000
Barley.....	10,868	305,000	1.24	378,000
Spring rye.....	172	3,000	1.40	4,000
Peas.....	774	16,000	2.60	42,000
Beans.....	2,461	46,000	4.04	186,000
Buckwheat.....	8,221	178,000	0.92	164,000
Mixed grains.....	4,800	172,000	1.08	186,000
		Cwt.	Per Cwt.	
Potatoes.....	30,783	3,270,000	1.38	4,513,000
Turnips, etc.....	15,516	3,454,000	0.60	2,072,000
		Tons	Per Ton	
Fodder corn.....	1,026	11,000	5.00	55,000
*Hay and clover.....	540,841	876,000	13.52	11,844,000
Total value.....				22,566,000

*There are about a million acres in pasture other than in hay and clover.

Flax for Fibre.—The climatic conditions needful for the growing of flax are a long and moderately warm growing season that is not liable to drought, and a considerable amount of moisture in the air. The parts of the Dominion most nearly fitting these needs are British Columbia, southwestern Ontario, the parts of Quebec lying near the St. Lawrence, and the Maritime Provinces generally. Any soil that will produce a good crop of oats is suitable. An acre of flax should produce nine bushels of seed and two tons of straw. The fibre flax plants must be pulled up by the roots. This being a slow method when done by hand, as in Europe, the Dominion Department of Agriculture has developed a machine to “pull” four to six acres a day. The subsequent processes of “deseeding,” “breaking” the covering of the fibre, “scutching,” “retting” by warm water in tanks to meet Canadian conditions, and combing



Oat Harvest

the tow for market are all to be seen in the newly rebuilt model factory at the Experimental Farm, Ottawa.

Before the war such flax as was grown in Canada was used commercially for linseed only, but the extraordinary demand for linen made the fibre more important. Whereas in Ontario the flax area was 4,000 acres, it rose in 1920 to 31,000, and both in Ontario and in Quebec linen mills are operated.

In 1766, Lieutenant-Governor Franklin stirred the jealousy of British manufacturers by telling Lord Shelburne that "the townships of Truro, Onslow and Londonderry, consisting in the whole of 694 men, women, and children, composed of people chiefly from the north of Ireland, make all their linen and even some little to spare to the neighbouring towns. This year they raised 7,524 pounds of flax which will probably be worked up in their several families during the war." The report of the Nova Scotia Agricultural College for 1921 stated that flax could be grown commercially at a profit in Nova Scotia if mills were established within reach of the grower but not till then. As a home industry, however, it might well be revived. Fibre flax is grown at the Kentville and Nappan Farms, and the product of 1923 from Kentville was officially described as "of an exceptionally good spinning quality and very similar to the best grades of Irish."

The demand for homespun linen has increased so rapidly in Canada that there is now a regular market for "tossed flax." As the name suggests, this does not require an even length of fibre or the very careful handling required by "line fibre." It can, therefore, be cut by an ordinary mower at a cost of \$1 an acre, compared with \$12 an acre for the hand-pulled, the straw being allowed to rett on the field before being hauled loose to the scutch mill. Allowing for the loss of seed entailed by this method of harvesting and handling, there is a reduction in cost of \$6 an acre.

In 1925 a flax-growing experiment conducted by the federal and provincial Governments was undertaken by 12 farmers in Lunenburg county. Of these, eight made a profit over all expenses and in one case there was a net profit of \$56 an acre. The long fibre sold at 16c. a pound, the tossed flax at 13c.

Owing to the limited area for this crop available in Lunenburg county, further experimental work was transferred to Goshen on the border of Antigonish and Guysborough counties, where 40 acres were sown in 1928. The result was promising for the establishment of the industry. Apart from the possible profit on fibre flax growing for the open market, anything that can stimulate the demand in Nova Scotia and so re-vivify the local industry of linen homespun is very desirable.

SUGAR BEET

In 1926 thirty-one Nova Scotian farmers under the guidance of the Superintendent of the Dominion Experimental Farm at Nappan co-operated in an experimental trial of sugar beet growing. The seed was supplied by the Dominion Sugar Co. of Ontario. It was officially reported that the beets grown were very nearly all of exceptionally good quality both in sugar content and purity. The sugar juice content varied from 16.67 to 20.84 per cent, and the co-efficient of purity from 83.90 to 95.50. Provided a large enough area of suitable land were available to supply a factory demand, other conditions in Nova Scotia are favourable to such an industry.

JERUSALEM ARTICHOKE (*helianthus tuberosus*)

This tuberous plant allied to the sunflower made its first known appearance as a cultivated vegetable in the garden of the French Settlement at Port Royal (Annapolis) in 1605. In 1607 it was introduced in Paris, and its use spread rapidly in countries neighbouring to France. The value of the plant as feed for stock is well known in Europe but is generally disregarded in Canada, though in France some 270,000 acres are devoted to its cultivation. In addition to its present value as feed for cattle, horses, and swine, it also has possible importance as a source of sugar, if scientific experiments now being carried on in the United States should prove commercially successful.

EXPERIMENTAL FARMS AND ILLUSTRATION STATIONS

Experimental Farms are maintained by the Dominion Government at Nappan in Cumberland county and at Kentville in Kings. The Nappan farm is one of the first four experimental farms established by the Act of 1886.

The Kentville farm was originated by the Nova Scotia Fruit Growers' Association of the Annapolis valley, and was taken over by the Dominion Department of Agriculture in 1911. This farm covers about 450 acres and includes orchards with 500 varieties of fruit trees, arable land for roots and cereals, dyked lands, pasture and woods, with buildings suitable for live stock, dairy, poultry and bee-keeping.

Here and at Nappan everything is provided for scientific agricultural experiments and to give practical



An Onion Field

aid free of cost to the inhabitants of the province in fruit and general farming.

Illustration stations are operated, under the advice of a division of the Central Experimental Farm at Ottawa, at fifteen points in Nova Scotia:—

- Yarmouth, Yarmouth County.
- Belliveau Cove, Digby County.
- Upper Granville, Annapolis County.
- Newport, Hants County.
- Kennetcook, Hants County.
- Middle Musquodoboit, Halifax County.
- New Glasgow, Pictou County.
- Tatamagouche, Colchester County.

Heatherton, Antigonish County.
Mabou, Inverness County.
Sydney River, Cape Breton County.
Christmas Island, Cape Breton County.
N. E. Margaree, Inverness County.
Big Baddeck, Victoria County.
Middle River, Victoria County.

The existence of these Illustration stations should be of great value to any settler in the neighbourhood, and new arrivals intending to farm would do well to get in touch with the owners.

Fruit Companies.—Of sixty-eight fruit companies in 1928, 51 were members of the "United Fruit Companies of Nova Scotia, Ltd.," and 16 were independent. The U.F.C. was incorporated in 1912, its object being "to unite subsidiary companies under one general management and to pool all products in a common fund." Potatoes are also handled by this association. The U.F.C. does valuable service in regulating shipments and marketing and by buying fertilizers and implements at wholesale prices.

FRUIT FARMING

The Apple.—Apple orchards in Nova Scotia are what orange and lemon groves are in California—a staple industry known far and wide and a lodestone to attract desirable settlers. At present the Annapolis valley and the Cornwallis valley, an extension of this, are considered the most suitable region for apple growing, but the provincial Government in 1901-3 set out thirty-seven model orchards of one or two acres in various spots, and have shown by practical experiment that other parts, especially of western Nova Scotia, are likely to claim attention. The danger in certain districts lies in late spring frosts and in unusually severe winters. A profitable crop is estimated at 100 barrels an acre for a full grown orchard.

The French introduced the apple in 1633. From 20,000 barrels in 1880 the pack increased to the present record of 2,145,000 barrels in 1929. As the citrus fruit industry in Florida and California grows and grows in spite of an occasional year of killing frost, Nova Scotia can well afford on rare occasions to lose a percentage of its crop in windstorm. In "off years" the pack may be cut in half.

Nova Scotia as a province has won the gold medal of the Royal Horticultural Society for apples in competition with other parts of the Empire. In 1924, at the Imperial Fruit Show, the province took 3 gold and 5 silver medals.

Owing to a difficulty in remuneratively marketing the very abundant crop of 1929, a Royal Commission has been appointed (1930) by the provincial Government to investigate thoroughly and without delay the condition of the apple industry in Nova Scotia.



Apple Orchards in the Annapolis Valley in Blossom Time.

This enquiry will cover such questions as the foreign and especially the domestic market in the Maritimes and Canada which has so far been somewhat neglected, standardization of quality, packing and storing, regulation of supplies and the use of low grade apples now mainly wasted.

The Annapolis valley—"The Garden of Nova Scotia"—stretches for seventy miles from the head of Annapolis basin to the bay of Minas with a varying width of from 10 to 15 miles. The North mountain lying along the bay of Fundy from cape Blomidon southwest to Brier island forms a barrier that shelters it from the northwest winds

and fogs, and parallel to this is the South mountain on the other side of the valley. Of the enclosed orchard area only about one-quarter is under cultivation. The price of land varies from \$60 per acre to \$200 for a six-year-old orchard and \$1,000 for one in full bearing. As in other parts first settled by the French, the farms are usually in narrow strips of from 20 to 120 acres, having meadow hay land in the bottom, orchard land midway, pasture and wood above. About 30,000 acres are now set out in apples.

A full-bearing orchard of ten acres should provide ample work for a settler and a fair living, but adjoining land for mixed farming is a comforting possession in an "off year." Even in the special fruit-growing areas mixed farming is recommended as an adjunct to the orchard, for, though it is possible to maintain fertility by the ploughing under of green crops and by commercial fertilizers, real stability is best obtained by catch crops, such as potatoes, beans, roots or flax. Farmers with the live stock necessary to keep the land in good shape for such crops weather best a lean fruit year and have, also, the more fertile soil.

Details of the fruit industry and of land available or for sale may be obtained from the secretaries of the Board of Trade at various centres in the valley, such as Annapolis, Royal, Middleton, Kentville and Canning, or from the Land Settlement Division of the Department of Agriculture, Halifax, N.S.

The cost of setting out an orchard and taking care of it until it becomes profitable depends on many variable factors. The size of the orchard and the nature of the soil, the capital spent in farm equipment and buildings, the market for vegetables and berries grown between rows, the live stock kept, the need and cost of commercial fertilizer—and above all in importance the amount of work done by the owner and his family and the personal equation of energy and thrift—all these points enter into costs. Experience, local knowledge, and disinterested advice alone give assurance.

The man who purposes to be an apple grower would be wise to work for a time as a hired man with owners of orchards, and not to lay out equipment in the dark, except he prefers as many do to "buy experience."

The case is different where an intending grower has a capital of \$15,000 to \$20,000, wherewith to buy a paying orchard and a home outright. It then becomes a matter of attraction to a particular property and neighbourhood, of observation how the orchard farm has been cared for, and a careful examination of the vendor's certified account books. When he has bought the property it depends on the buyer whether it will deteriorate, or become more profitable than before. The beauty of a home place lovingly



Barrels of Apples for Great Britain

cared for bears little or no relation to its size, cost or pretensions, and, apart from the ethical influence on the owner and his family, charm is a growing factor of capital value.

By-Products of the Apple and Fruit Industry.—Apples that fail to come up to the standard of a properly graded pack or are superabundant in a year of very heavy crops are utilized by the 11 cider or vinegar factories, the 9 fruit canners and the 10 evaporating and dehydrating plants.

The apple culls, skins, cores and pomace from the packing houses and factories, and which form the base of most commercial jams and jellies, have been largely exported

to Europe, Ontario, Quebec and the United States, but are now in a measure used by the seven jam and jelly makers and the nine syrup and fruit juice makers. A by-product known as calcium malite or sugar sand is worth attention.

Blueberries.—In the counties of Yarmouth, Shelburne and Digby are the chief districts in which “blueberry barrens” are found; Cumberland and Guysboro also ship considerable quantities.

To obtain a full blueberry crop these barrens have to be burned over to destroy the weeds which smother the bushes. If firing is adopted, as is general, care should be taken to burn in the dormant period of early spring, and to avoid the destruction of the peaty layer of soil by fire. Mowing is preferable where possible, but still better is grazing by sheep or goats.

In the three counties specially named there are areas of barren lands amounting to 460,000 acres, a result of careless burning for blueberry production. Of this acreage much will remain barren owing to the loss of almost all the soil by frequent firing.

In the past few years the Nova Scotia Department of Lands and Forests wisely decided that the province could not profitably allow such conditions to continue, and adopted the policy of setting aside some areas of Crown lands which were found most suitable for blueberry barrens and allowing the remainder if possible to recover their forest growth.

Under an act passed in 1928 eight blueberry associations in Yarmouth and Shelburne counties were incorporated, and 30,000 acres were set apart for blueberry barrens to be fired under the supervision of forest rangers. A result of this policy is seen in the shipment in 1929 of 32,881 crates from Yarmouth valued at \$250,000, out of which some families realized \$1,200 each. The U.S.A. market is insatiable. One pie factory in New York uses 3 car loads of blueberries a day in the season.

The variety at present profitable in Nova Scotia is the low-bush blueberry (*vaccinium Pennsylvanium*) and not the high-bush (*vaccinium corymbosum*) which is said to be late in bearing and less suitable to Nova Scotia than further south. It seems that a hybrid between the low and high bush varieties might be evolved by selection and

propagation which would avoid these doubts, and produce a large high-priced berry similar to those now marketed from New Jersey and elsewhere. The blueberry can be canned and also dehydrated.

The blueberry needs an acid soil and responds well to cultivation and the use of a prescribed fertilizer. Its enemies are a fungus mildew, a fungus rust, and insects, but the loss thus entailed may be scientifically avoided and hinders the industry far less than bad packing and lack of systematic co-operative marketing.

Cranberries.—The cranberry bogs sparsely scattered in Nova Scotia and other provinces do not meet the home demand in Canada. In 1929 imports were valued at \$241,371 or \$11 a barrel, in spite of an ad valorem duty of 25 per cent. There were no exports, the American market being protected by a tariff of $1\frac{1}{2}$ cents per pound. When the American crop has been short Nova Scotia cranberries have found a market as far west as Calgary. The success of cranberry bogs in New England is due both to the location of swampland near available sand and an organized co-operative marketing and grading system which is lacking in Nova Scotia.

A crop from bogs near Auburn in King's County has yielded on the average 5,000 barrels; a yield of 50 to 60 barrels an acre is usual.

The industry in Nova Scotia is capable of further development, the requisite being a cool climate, moderate rainfall, an acid peaty soil, sand to lay on the top of the peat to keep down weeds, and water for flooding in spring and summer, and in winter to protect the plants from cold.

The Foxberry or Lingon, sometimes called Rock or Mountain cranberry, is a delicious fruit suitable for the same purpose as the cranberry but growing on dry barrens instead of low boggy tracts. It is grown in Guysboro and Richmond counties and finds a market in Chicago. Failure to fully market in 1926 owing to Newfoundland supplies resulted in an advertising campaign, which successfully revived the demand and caused consumption of the surplus crop held over. Official inspection and standardization of the foxberry barrel promise to restore a steady market, both locally and outside the province.



Nova Scotia Strawberries

Other Fruits.—The summer temperature is low for peaches and grapes on a commercial scale, but pears, plums, and cherries grow and ripen well. Bear river cherries were once famous, and could well live up to their name.

The strawberry organizations such as those in Mass-town, Amherst, or East River, maintain a steadier distribution and higher level of prices than in the section where no system prevails. In an average season they collect a supply of fruit enough to employ some refrigerator cars to Montreal and Boston. Canning and jam making facilities to take prompt care of surplus perishable fruits are, however, lacking in most districts and even in the Annapolis Valley.

Apart from apples, the value of the orchard or garden fruit marketed in 1928 was only \$69,950, of which \$46,200 was credited to strawberries.

It is surprising to find that the market value of all the fruits, other than the above, was only \$23,750. Though the climate does not favour grapes or peaches, yet the growing of raspberries, currants, pears, plums and cherries seems to be neglected. Varieties of plums, Italian prune and quince recommended by the Kentville Experimental Station are in demand and should be more extensively grown.

An explanation of the meagre value shown by the Dominion Bureau of Statistics may perhaps be found in the wayside sales to tourists, the value of which is unrecorded but has no doubt increased from year to year.

PRODUCTION OF GARDEN BERRIES, ETC., 1927, 1928

Strawberries.....	1927—450,000 quarts at 14c.....	\$ 63,000
“	1928—420,000 quarts at 11c.....	46,200
Raspberries.....	1927— 21,700 quarts at 20c.....	4,340
“	1928— 20,000 quarts at 21c.....	4,200
Pears.....	1927— 13,500 bushels at \$1.75.....	23,625
“	1928— 5,000 bushels at \$1.70.....	8,500
Currants and other berries...	1927— 90,000 quarts at 14c.....	12,600
“ “	1928— 85,000 quarts at 13c.....	11,050

The United Fruit Company of Nova Scotia embraces fifty-one co-operative fruit companies and does most necessary work in marketing and regulating shipments, and in buying fertilizer and implements wholesale. The marketing, packing and grading of apples are regulated by Act 8-9, George V.

Medicinal Plants.—There are many plants in Nova Scotia, as elsewhere, whose leaves, roots, seeds or fruit are of commercial value when properly dried. Among the commonest of these are bloodroot, wintergreen, tansy, horehound, caraway, yellow lady's slipper, balm of gilead, spearmint, and peppermint. Lists of such plants, with instructions on collecting and drying, are to be found in "Medicinal Plants and Their Cultivation in Canada," by J. Adams, Experimental Farm Bulletin No. 23, Department of Agriculture, Ottawa.

Blueberry and huckleberry leaves dried for medicinal purposes are shipped from Yarmouth, e.g., 100 tons in 1927.

Peppermint (*mentha piperita*) the variety grown for oil is cultivated on a small scale in Pictou county, but in spite of a protective duty, Canadian competition with the U.S.A. industry, established for a century and supplying 40 per cent of the world's demand, is handicapped.

EVAPORATED FRUITS AND VEGETABLES

Factory drying methods have made an immense advance since it became a question of feeding armies. Potatoes and onions have been dried by the million tons and apples in proportion. Nowhere in Canada can fruit be properly sun-dried and so far the apple is the only fruit that has been artificially dried on any large scale.

Bulletin No. 24 on "Evaporated Apples," issued by the Department of Agriculture contains plans and illustrations of the plant and machinery used in the industry. Dehydration is the subject of Bulletin No. 90 (1927).

An Act of Parliament and an Order in Council of March, 1916, ensure proper inspection and standardization, so that home and foreign buyers can now buy with confidence.

Considering the lightness for transport of dried fruit and vegetables as compared with the natural or canned article and the immunity from all danger of ptomaine poisoning, it may be taken as certain that the dehydrating process will develop rapidly and be extended more widely to all kinds of fruit and vegetables, pears, peaches, berries, corn, peas, beans, turnips, carrots, spinach, etc., and will be a means of saving to best advantage the mass of ripe fruit and vegetables now not marketed. Carefully studied plans for dehydration equipment suitable to a community

of growers have been put into practice by the Department of Agriculture, Ottawa, to which enquiries should be addressed.

The United Fruit Company of Nova Scotia operates a factory at Aylesford for canning and dehydrating apples, but the field for a greater saving of fruits and vegetables is not yet covered.

FERTILIZERS

The attention of farmers living by the coast may be drawn to the valuable supply of fertilizer in the seaweed and fish waste now neglected or thrown away, which could be either hauled direct to the field and there ploughed in, or be made into a compost or otherwise treated. The value of this undried waste is about \$10 a ton. Nova Scotia farmers are urged to make use of the large limestone deposits of the province. The chemist of the Agricultural College states that "95 per cent of the soils of Nova Scotia require more or less heavy applications of lime." "Nova Scotia," he says, "is only one small area of the agricultural world which has come to the conclusion that the trio, limestone, properly cared for manure, and wisely selected commercial fertilizers, must go hand in hand, if we are to have good farms." Of the three chemical ingredients necessary besides lime for crop growth, namely, nitrogen, phosphorus and potash, the first in the form of sulphate of ammonia is a large by-product of the Nova Scotia steel industry. The use of lime was for a time discredited owing to the injudicious application of burnt lime, but finely ground limestone is now rightly in vogue as being "fool-proof," less costly than burnt lime and more convenient to handle.

To facilitate its use the provincial Government subsidizes transportation so that farmers may obtain ground limestone at a cost of \$4 a ton delivered.

THE FUR INDUSTRY

FUR FARMING

The world market demand for fur increases yearly, and, as the limits of the fur-bearing regions narrow, will have to be more and more supplied from domesticated breeds. The price of \$2,900 for a silver fox pelt or \$35,000

for a breeding pair may not recur, but, seeing that North America produces about one-quarter of the one hundred million dollars worth of the world's marketed supply, the future of fur farming is assured.

In Nova Scotia the industry is by now well established under proper regulations by the Department of Lands and Forests, without whose permit no fur farming is allowed. Research into fox pathology, cause and cure of disease, right feeding, etc., is the work of experts in the Dominion Department of Agriculture, and readily available for the farmers use.

The conditions needed for a successful fox ranch are humidity, a sheltered area, a woodland of birch, spruce, fir and cedar, a ground covering of heath and shrubs like the blueberry, a climate cool in summer but cold enough in winter to produce heavy fur and over-hair, and a soil with hardpan to prevent burrowing. Such conditions are common in Nova Scotia.

Foxes were successfully bred in Nova Scotia as far back as 1904 by Capt. James McConnell of Port Hillford. In 1928 the foxes in captivity, mainly "silver," were reported as 5,524. Fox farms numbered 338, muskrat 13, mink 12, and raccoon 9. The fox pelts sold from farms were silver fox, 1,985, cross or patch fox, 120, red, 85; total value \$202,839. Prices paid for a silver fox pelt varied from \$15 to \$250. In 1928 the fur-bearing animals in captivity were valued at \$839,365, and the live animals sold were valued at \$164,315.

At the present time (1930) it is estimated that there are more than 400 fur farms, and that the value of the properties and animals approaches \$1,250,000. The Nova Scotia Fox Breeders' Association is affiliated with the Canadian National Association and benefits by its Co-operative Marketing Department.

It is well to bear in mind that fashions change and at any time Bond street, Fifth avenue and Paris may tire of silver fox and issue its ukase for some other expensive fur. Thus otter, fisher and marten may be the vogue, and now that the easily-descended skunk has no longer need to pose as "black marten" or "Alaska Sable," the 60 skunk farms once to be found in Nova Scotia may well reappear.

Especially suitable to Nova Scotia and its sheep districts, though the stock is hard to obtain, is the Karakul sheep, which supplies the fur market with "Persian lamb" or "Astrakhan." This was the first animal bred for fur. Though the export of Karakul is now forbidden from Russia or Bokhara, or was in the times of Czardom, the strain in North America is still kept up from stock imported to Texas in 1908 and 1912. Karakules were raised in Nova Scotia from 1914 to 1922 and it has been found that the crossing of the Karakul with the coarser-haired breeds of sheep, such as Lincolns, and Cotswolds, frequently produces a good Persian lamb fur.

THE FUR TRADE AND TRAPPING

The early French explorers were attracted to Nova Scotia partly by the amount of fur-bearing animals and the fine quality of their fur, due in great measure to the climatic conditions and the nature of the country.

In the past decade or so the high prices paid and the heavy demand for fur have resulted in the purchase by the big fur buyers of all pelts obtainable, regardless of choice quality, and this fact has greatly increased the take of wild animals especially mink and muskrat. The official figures for exports of pelts would probably be increased by a considerable number of pelts illegally trapped for buyers who do not "play the game." Efforts are made to establish a Fur Buyers' Association which to their own ultimate interest will co-operate with the Department of Lands and Forests and stay depletion.

A regular force of game wardens, rangers and inspectors of pelts sold has been organized in the last few years, and promised to protect the fur and game resources of the province effectively.

Beaver is again becoming plentiful especially in the western parts and mink are also on the increase.

There are no fur goods manufacturing establishments in Nova Scotia, the nearest being two in New Brunswick.

The fur skins exported from Nova Scotia in the season 1928-29 were:—

Bear.....	2	Raccoon.....	1,241
Fox (cross).....	135	Seal.....	18
Fox (red).....	1,011	Skunk.....	1,016
Fox (silver).....	2,520	Squirrel.....	444
Lynx.....	3	Weasel.....	17,688
Mink.....	1,704	Wildcat.....	278
Muskrat.....	30,463	Deer Hides.....	44
Otter.....	72	Moose hides.....	125
Rabbit.....	4,861	House cats.....	143

WATER POWER¹

The ice of the glacial period, though it rendered large tracts of country unfit for use by converting them into shallow lakes or morasses, compensated by making many of the lakes into potential storage reservoirs and directing the streams over ledges and thus supplying many water-power sites. The possibilities of these bases of water-power are now discovered.

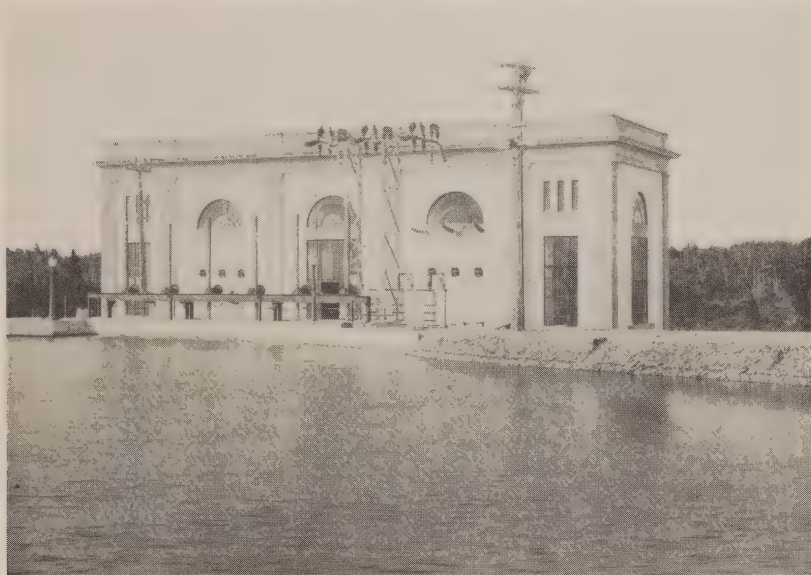
Near the present site of Annapolis Royal the French settlers built what is believed to be the first water-driven mill on this continent. Probably no other province has made so much use proportionately of its water-power resources in small saw mills, grist mills, and carding mills, but only during the past 20 years has the value of these resources been realized.

The southern or Atlantic slope of the province has the largest rivers and the most important power sites, especially concentrated in that part of the western part of the province where there are no coal resources. Much of the northern slope from Windsor to Yarmouth is steep, and while the water supply is much smaller than the rivers to the south, the high heads available afford compensation in several excellent power sites. The remainder of the northern slope including Cumberland and Colchester counties has no large water-powers owing to the absence of lakes suitable for storage but has within its area accessible coal fields. Cape Breton has only one large power site, that at Lake Ainslie but the power available there especially when linked with certain rivers is more than sufficient to supply

¹ Prepared by Dominion Water Power and Hydrometric Bureau, Department of the Interior.

all the power demand of the island likely outside that of the Dominion Steel and Coal Corporation whose coal supply is immense.

Nova Scotia has the greatest precipitation of rain in Canada east of the Rocky mountains as a compensation for smaller drainage basins, and the lakes available for water storage can fairly regulate the flow even when the rivers run low.



Hydro-electric Development at Sheet Harbour, Guysborough County

At the present time the commercial capacity of Nova Scotia water-powers including prospective reservoir sites and the smaller streams is estimated at about 300,000 horse-power. Included in this estimate are 21 sites ranging from 1,000 to 30,000 horse-power definitely surveyed and totalling 129,871 out of 133,853 horse-power that is listed as available.

Compared with that in some other provinces the sum total is small, but all the sites in Nova Scotia are readily accessible and within economic transmission of well settled territory. The total hydro-electric development is now 74,356 horse-power, which in view of early development will soon be raised to 107,000 horse-power.

The following are the water-powers of rivers whose capacities are above 5,000 horse-power.

River	Estimated continuous flow
Mersey.....	39,000
Medway.....	19,800
East River Sheet Harbour.....	10,960
Bear East Branch.....	6,700
Gaspereau.....	6,636
Tusket.....	6,000

The water resources in the province are administered under the Nova Scotia Water Act of 1919. The Nova Scotia Power Commission of three members appointed by the Governor in Council has been established to carry out developments by public enterprise when and where desirable.

Within the past few years the Power Commission has completed and is operating developments at St. Margaret's Bay (Indian river and Sandy lake), the Sheet Harbour system and the Mushamush river system in Lunenburg county, and is now actively engaged in hydro-electric operations on the Mersey river (Queens) which supplies power to the important new mills of the Mersey Paper Co., Ltd.

The commission is also providing for the development of 2,500 horse-power at Tusket Falls to supply the needs of the town and county of Yarmouth. The commission has 11 generating stations which will operate 56 per cent of the 107,000 horse-power under development.

The Dominion Water Power and Hydrometric Bureau of the Department of the Interior actively co-operates with the Nova Scotia Power Commission by supplying information as to stream flow and run-off records, maintaining and adding to the number of gauging stations and giving general assistance in further investigation of the provincial water-power resources.

TIDAL POWER

The maximum tidal range in the bay of Fundy on a month's average is 42 feet at Burntcoat head, Cobequid bay. The rise above low-water mark is 31 feet at "neap" and 53 feet at "spring" tides. The average range throughout the whole bay is about 30 feet. It has been estimated

that a total of 3,500,000 horse-power might be practically obtained from the bay of Fundy.

In Nova Scotia little has been done to project any large schemes, but there are many points where two-basin schemes of reasonable size with a full-tide capacity of 2,000 to 3,000 horse-power are possible. Such localities are near Avonport on the Gaspereau river, at two or three points on the northern shore of Minas basin, on the Annapolis river and in Digby basin. Minas basin, for a half-



Mersey Paper Company Mill at Liverpool, N.S.

tide system, single basin, forms an opportunity for acquiring very large amounts of intermittent energy, which might be utilized at very low cost power for industries not necessarily requiring continuous power. On each square mile of Minas basin, harnessed, it should be possible to obtain 100,000 K.W. hours daily.

The most reasonable proposition is one comprising a smaller and a larger full-tide power system, each having two basins which are available in Cumberland basin,

centering on the Elysian fields and Amherst point combined with the Maccan and Hebert rivers. The Nova Scotia Water Power Commission has put considerable work into the study of the smaller of these two schemes which will give about 20,000 horse-power continuous and intends to carry its investigations to a point where a fair estimate of the cost of power may be arrived at. The larger scheme would give from 65,000 to 75,000 horse-power continuous. In both cases it is now assured that the electric energy produced would be very low in cost and thus be attractive to industries requiring large blocks at a low price.

In the Maccan river, which flows into Cumberland basin, there is a tidal "bore," though not so high as that of the Petitcodiac river in New Brunswick.

Perhaps some day the tidal flow through Digby gut may be utilized for hydro-electric power. At each tide 21,000,000,000 cubic feet of water runs in and out of this gateway, which at the narrowest point is about 100 yards wide. The velocity is five miles per hour at half tide and the current is believed to be as strong at the bottom as at the surface. The rise of the tide at the gut is about $27\frac{1}{2}$ feet.

The tides of the bay are of the "stationary," as opposed to the ordinary "progressive," type. Though the latter variety is not wholly absent, the great variation between high and low tide is due mainly to the oscillation of the body of water in the box-shaped bay. This oscillation approximates, in periodic movement, to that of the ocean tides and is due to the motion set up by them.

(See "Tides in the Bay of Fundy," in *Geog. Review*, April, 1922, by H. A. Marmer, U.S. Coast and Geodetic Survey, and *Geol. Survey*, Vol. VII, 1894, M. 10-21; and Vol. IV, 1888-9 N. 17.)

A wave-counter or undagraph is maintained at Chebucto Head.

IMMIGRATION

It is noticeable that in 1921 only 8.31 per cent of the population of the province were classified as "foreign born," and that of these all but 1.33 per cent were of kindred stock from Great Britain and the United States of America. The waves of immigration to Canada, gathering force with

the opening of the twentieth century, swept westward and carried with them many Nova Scotians heading for the newly-formed provinces; but Nova Scotians are realizing that settlement prospects are as good in their native province as in seeking homestead land in the west, far from existing railways.



Digby Gut, Entry of Annapolis Basin

Figures for immigration into Nova Scotia for the year ending March 31, 1929, give a general idea of the number and racial origin of the immigrants in a normal year:—

English.....	1,006	Magyar.....	28
Scotch.....	238	Ruthenian.....	26
Irish.....	75	Slovak.....	17
Welsh.....	30	Polish.....	15
French.....	23	Bulgarian.....	11
United States.....	193	Hebrew.....	14
Scandinavian.....	18	Syrian.....	13
German.....	17	Other.....	20
Italian.....	70		
Belgian and Dutch.....	14	Total.....	1,828

Nova Scotia is the nearest part of the Empire in constant and direct communication with the British Isles. The distance to Liverpool or Glasgow is 2,400 miles, or less than half of that from Plymouth to Cape Town, South Africa (5,295), and about one-fifth of the voyage to

Australia or New Zealand whether by the Panama or Suez canal. Fares are proportionately less, ranging now from \$75 or £16 (third class) to \$140 and more cabin. Settlers' effects are admitted free of duty.

Settlers, after passing through the hands of the federal immigration officer on arrival are met by a representative of the Nova Scotia Department of Agriculture, who directs to destination and gives information where to obtain employment. List of farmers needing help are available and also a list of farms for sale. The services of an expert valuer are offered free of charge to prospective settlers.

The Canadian Women's hostel at Halifax attends to the reception of women seeking housework. They are met by the secretary and receive free lodging at the hostel for 24 hours. Catholic girls are accommodated in St. Teresa home. Much friendly work is also done for the stranger by the Salvation Army Immigration Department, the Y.M.C.A. hostel in Barrington st., and the Y.W.C.A. in Hollis st.

A training farm is maintained at the Dakeyne farm, Falmouth, Hants county, for boys sent out from England by the National Association of Boys Clubs. This is the first farm to be operated by this imperial association.

There are now in Great Britain and other parts of the Imperial Commonwealth many with independent means of from \$2,500 to \$5,000 a year, whose net income has been greatly curtailed by very heavy taxation and by the rise in the cost of living. Large numbers of officers, military, naval and civilian, have also been taken off the active list and retired on a pension. Such numbers are more likely to increase than diminish. For these it must be harder than before fittingly to bring up a family. Even though a good education at moderate cost in the British Isles may be easier to obtain than it has been, the competition for openings in a crowded community becomes more severe. Those parts of the Empire that can offer a lower cost of living, a good education, and a wide field of professional and other employments appeal to the above-named class of settlers especially if we add the lure of sport for rod and gun and congenial social surroundings. Nova Scotia satisfies these conditions besides being but a week away from British ports.

The federal and provincial Governments both do much to smooth the path of the desirable incomer and to further his interests when settled.

The Canadian Farm Loan Act is in operation in Nova Scotia, enabling legislation having been passed in the provincial session of 1927. This Act provides long-term loans to farmers for the purchasing of farm lands, fertilizers, seed, live stock and equipment, for the proper operation of farms, for erecting buildings and other permanent improvements and to discharge present liabilities. A maximum loan of \$10,000 (£2,000) can be made but no loan can be granted in excess of 50 per cent of the appraised value of the land for agricultural purposes and 20 per cent of the value of the fully insured improvements therein.

The prudent settler is greatly aided also by the Agricultural Experiment Station at Nappan and Kentville, by the Nova Scotia Agricultural College at Truro, and its extension service all over the province, by the entomological laboratory at Annapolis Royal, by co-operation in the purchase of live stock, seed, fertilizers and tractors, by reliable publications and free advice.

EMPIRE SETTLEMENT

Boys' Land Settlement Scheme.—The province has entered into an agreement for the placing of British boys with farmers where they can gain proper farming experience and so prepare themselves for the benefits of the British Boys Land Settlement Scheme. The National Association of Boys' Clubs of England, has associated itself with the province of Nova Scotia in boys' settlement activities. A tripartite agreement has been made between the provincial Government, the federal Government and the British Government involving a combined expense of five million dollars (£1,000,000) for the settlement of British boys on farms in Canada between 1928 and 1937. To those eligible under certain regulated conditions, including proficiency in farm work and accrued savings of \$500 (£100), a loan of \$2,500 (£500) may be made for the purchase of a farm. The loan is repayable within 20 years at 5 per cent interest.

Nova Scotia is included among those provinces which are participating in this agreement.

An Assisted Passage Agreement, dated the 1st of January, 1930, between the Dominion Government and the British Government provides cheap passages for certain classes of adult British immigrants and free passage for certain classes of juvenile British immigrants from Great Britain and Northern Ireland. These classes are:—

- (a) Agricultural families coming for land settlement or farm placement.
- (b) Houseworkers.
- (c) Juvenile immigrants coming under provincial or approved society auspices.



Gaspereau River, King's County—A Family Party

For adults (those over 19 years of age) the ocean rate payable by the immigrant is £2, the balance being made up by contributions from the Dominion Government, the British Government and a rebate by the steamship companies. Children under 19, belonging to agricultural families, receive free passage. This agreement expires on the 31st December, 1930, and it is not certain what arrangement will be made after that date.

Immigration inspection, both overseas and at Canadian ports of arrival, is controlled by the Dominion Government. The Immigration Act and regulations exclude those who are mentally, morally or physically unfit. Medical inspection, whether in the British Isles or on the continent of Europe is free of cost to the migrant. In the British Isles the

migrant may be examined either by a Canadian doctor or by a British roster doctor. Immigrants from the continent of Europe are examined by Canadian medical officers at certain ports of embarkation.

The regulations relating to health, character, physique and literacy apply alike to all races and all nationalities. Other regulations such as occupation and passport do not apply alike to all. British migrants are admitted to Canada without regard to occupation and they are not called upon to have passports. Occupational tests are applied to immigrants from all Central and Southern Europe including Russia. The admissible classes are farmers with capital, coming to settle on the land, *bona fide* farm labourers coming with assurance of employment, and female domestic servants coming to suitable homes. Certain relatives are admissible apart altogether from the question of occupation. These relatives are wives and unmarried children, parents and unmarried brothers and sisters.

There is now in effect an important regulation made by Order-in-Council in August, 1929, which excludes from Canada all contract labour other than agricultural workers and domestic servants. There is a provision in the regulation which allows the Minister of Immigration to admit any person under contract whose labour or service is required in Canada. This regulation does not interfere with immigrants coming to Canada on their own and seeking employment in the Dominion.

Nominations.—Any British subject resident in Canada who wishes to employ a household worker above 17 years of age or an agricultural family may nominate any British subject in Great Britain or North Ireland, either by name, or by giving a description of the help required, wages offered, and period of employment. In the latter case the agricultural family or houseworker is selected by the overseas officials of the Department of Immigration.

By an arrangement between the steamship companies and the British Government, what is known as the "£10 rate" for ocean passage, came into effect on January 1, 1929. This rate is now applicable to all desirable immigrants without respect to employment. The £10 rate, which

involves a contribution from the British Government is not applicable to migrants from the Irish Free State as that state does not contribute anything toward passage.

The province is also working with the Canadian Pacific Railway and Dominion Atlantic Railway Colonization Board to attract financially independent British to the province. During the winter months a special representative is attached to the office in London of the Agent General for Nova Scotia to attend to correspondence and inquiries. Several families possessed of a minimum fixed annual income of £300 besides some capital have already either migrated or expressed an intention to do so.

The province is co-operating with the Canadian National Railways Colonization Department and with the Canadian Pacific Railway Colonization Board in establishing Danish settlements in various parts of Nova Scotia, the suitability of which for the dairying industry is attracting the attention of Danish farmers.

TRANSPORTATION

RAILWAYS

No spot in Nova Scotia being more than thirty miles from one of a hundred arms of the sea, railroad construction, towards which the provincial Government offers a subsidy, is not pressing. The mileage in 1928 was 1,421.

The trunk line is that of the Canadian National railway, owned and operated by the Dominion, with about 600 miles in the province. Halifax, the terminus, is 836 miles from Montreal. The eastward branch from Truro serves the mining and industrial regions of New Glasgow and Sydney, the trains being ferried across the strait of Canso at Mulgrave, where much of the fish is shipped in refrigerator cars for the western market.

Subsidiary to this division are various coal lines. The Dominion Steel and Coal Corporation ships in winter to the open harbour of Louisburg by its own line from Sydney. The Inverness Railroad and Coal Company line starting from Inverness, on the gulf of St. Lawrence, follows the coast line past Port Hood and connects with the main line at Hawkesbury.

The southern entrance of the Bras d'Or lakes at St. Peter connects with the Canso ferry by the Cape Breton railroad. From Halifax an eastward extension of the Canadian National Railway system opens up the Musquodoboit valley.

The western part of the peninsula is served by the Halifax and Southwestern branch of the Canadian National Railways (389 miles) and by the Dominion Atlantic (300 miles). The latter is controlled by the Canadian Pacific, which thus has an independent line from Truro through Windsor, to a point, Windsor Junction, 21 miles from Halifax. The Dominion Atlantic also extends from Windsor through the Annapolis valley and Digby to Yarmouth. Short lines subsidiary to the Canadian National Railway trunk line runs from Macan to Joggins and from Springhill Junction to Parrsboro.

From Yarmouth, the point of arrival of fast steamers from Boston (235 miles), the Halifax and Southwestern (C.N.R.) runs to Halifax. From Bridgewater in Lunenburg county a branch strikes across to Middleton in the Annapolis valley. Here it crosses the Dominion Atlantic and runs parallel with it to Victoria Beach on Digby Gut.

It is to be noticed that while there are three great lines connecting Middle and Western Canada with Moncton and Saint John, from Moncton to Halifax there is only one line for the 186 miles. This bottle-neck condition has been improved by additional double-tracking to meet the leaping and bounding needs of the ocean terminals and the long "Atlantic wharf," as Nova Scotia is called. Nova Scotia has the natural and, in winter, the necessary ports to serve it. Eastern Nova Scotia, again, having the only coal-field east of the prairies, may well become a Canadian Newcastle or Sheffield.

The Cobequid mountains are almost as large a factor in the insulation of Nova Scotia as is the sea. The railroad climbs the valley of Folly river for nine miles at a steep grade, passes over the range at over 600 feet and descends by another steep grade to the lowland of Cumberland county. There are 55 miles of electric railways. The only canal is St. Peter's ($\frac{1}{2}$ mile) connecting the Bras d'Or lakes with St. Peter's bay (C.B.).

ROADS

At the end of 1928 the roads in the province were classified as:—

	Miles
Trunk Highways.....	1,588.42
County “.....	2,940.87
Local “.....	9,879.25

Of these 3,169 were surfaced, mainly with crushed gravel, 3,336 were graded but not surfaced and 7,903 were unimproved. To abate the dust in sections heavily travelled, calcium chloride was used. In 1928 the 961 accidents



Portaging Up-to-date

resulted in 46 deaths and 526 injuries. By cancellation of licences, patrols of motor cycle corps, and educational publicity the Highway Department is making every effort to make road travel safe or safer than in other provinces and other countries.

Motor car ferries are operated at Canso strait, Ross Ferry, Grand Narrows, Englishtown, New Campbellton and Little Narrows. In 1928 these carried 40,618 cars.

A map showing the motor roads, the centres from which hunting and fishing points may be reached, and also

the chief natural resources of the province, is published by the National Development Bureau, Department of the Interior, Ottawa, and can be had free on application.

The "Official Road Map" of the Nova Scotia Motor League is also a good guide to the highways that encircle and traverse the whole province.

LOCAL STEAMSHIP SERVICES

In Nova Scotia there are no less than 99 harbours officially recognized, of which 71 are on the mainland coast and 28 on Cape Breton island coast.

The list below of local routes shows the abundant communication offered by water between all parts of the indented coast and to extra-provincial ports:—

Halifax to St. Johns, Newfoundland, and St. Pierre, Miquelon (Farquhar Line).
 Halifax to St. Johns, Newfoundland, and New York (Furness-Red Cross Line).
 Halifax to Sydney, Louisburg, etc., via St. Peter's and Baddeck.
 Halifax to Canso and Guysboro.
 Halifax to Dayspring, via Riverport, La Have, etc.
 Halifax to Sober island, St. Peter's, etc.
 Halifax to Sherbrooke (Guysboro county).
 Halifax to Ingonish and Magdalen islands.
 Halifax to Mulgrave and Cheticamp.
 Yarmouth to Boston, U.S.A. (Boston and Yarmouth Steamship Co.).
 Yarmouth to New York (Eastern Steamship Lines).
 Yarmouth to Barrington Passage and Shelburne.
 Yarmouth to St. John, N.B.
 Sydney to Baddeck and Whycomagh.
 Sydney to Port Hood and Cheticamp via St. Peter's and Mulgrave.
 Sydney and Bay St. Lawrence route.
 North Sydney to Port-aux-Basques, Newfoundland.
 Mulgrave to Cheticamp, Margaree Harbour and Pleasant Bay.
 Mulgrave to Arichat.
 Mulgrave to Guysboro.
 Mulgrave to Canso.
 Grand Narrows to St. Peter's and Mulgrave (Bras d'Or Lakes route).
 Pictou to Charlottetown, P.E.I.
 Pictou to Souris, Prince Edward Island, Magdalen islands and Quebec.
 Wolfville to Kingsport and Parrsboro.
 Digby to Saint John, N.B. (C.P.R.).
 Margaretsville to Saint John, N.B.
 Bear River to Saint John, N.B.
 Granville Centre to Saint John, N.B.
 Iona to Baddeck.
 Mira gut and Mira river.
 Barrington and Cape Sable island steam ferry.

SHIPBUILDING

Canadian shipbuilding dates from 1605 with the small vessels built at Port Royal (Annapolis) by François Gravé, Sieur de Pont, sailor from St. Malo. Seventy years later Intendant Talon's trading vessels are voyaging from Quebec to the West Indies and France—forerunners of those of the later triangular course—Canada to South America, Marseilles and return.



Yarmouth, N.S., Where the "Pompey" was Built in 1761

Shipbuilding after the fall of Louisburg dates from the launching of the "Pompey," 25 tons, at Yarmouth, N.S., in 1761.

The year 1833 is the famous seamark when the *Royal William*, capacity 363 tons, left Pictou on August 29th, and reached London in twenty-five days—the first ship to cross the ocean under no power but steam. Though this ship was built in Quebec, it was to Nova Scotia, in the persons of the three Cunard brothers, that the vision came. Steam power, however, was as yet a baby. In 1850 Mackenzie, of Pictou, astonished Glasgow with the *Hamilton Campbell Kidston*,

the biggest sailing ship the Clyde had ever seen. About 1864 Nova Scotia was launching 300 vessels, and by 1880 Eastern Canada, building, sailing, owning and selling, had become one of the four most live shipping districts of the world. For a period between these dates Canada headed the lists of tonnage in proportion to population.

It was not so much the use of steam that caused the decline as the change from wood to metal. Had Nova Scotia developed metal industries a generation sooner, her 3,000 ships on the Canadian registry with a net tonnage of 500,000 tons in 1881 would surely not have dwindled to the minimum of 1,436 and 126,428 tons in 1928.

But the general substitution of steel for wood and big tonnage for small, the severe protective policy of the United States, and the free trade of Britain enabled the inherited experience of the Clyde and elsewhere to capture the market. Though there was a gradual recovery after 1902, it was not till the traffic and transport issues became acute in 1916 that production was speeded up.

In 1916 sixty wooden vessels, representing 12,000 tons had been completed and the war had stimulated the yards to such full and effective work that in 1917 20,000 tons were completed without any Government aid to the builders.

The report of the Nova Scotia Shipbuilding Commission in February, 1918, shows that at that time 27,500 tons of wooden ships were on the stocks, exclusive of fishing schooners and one munition steamer. This fleet consisted of sixty-six schooners, ten of which were four-masters, and they were being built at no less than forty small yards nearly all round the coast. It was clear that wooden-ship building could be safely left to Nova Scotian enterprise unaided.

The case of steel ships was different. Here large plants and capital were needed. Though for many years plates of fair size had been rolled at New Glasgow, the difficulty lay in securing the heavier plates, which were now scarce because of the Old Country demand and the vast shipbuilding program launched in the States. The Admiralty Controller advised that "it would be of great service if arrangements could be made whereby ships' plates could be rolled in Canada," but without Government

aid and the assurance of a continued demand the diversion from established products and the building of a heavy plant was beyond the power of existing companies. Arrangements were ultimately made with the Dominion Iron and Steel Company for production of heavy plates.

Meanwhile the Imperial Munition Board issued contracts for steel and wooden ships to cost \$64,500,000, of which the Nova Scotia Steel & Coal Company at New Glasgow and the Halifax Shipyards Limited took \$1,340,000. The latter company has a dry dock at Halifax 560 feet long. The three above-named companies have since been merged in the Dominion Steel and Coal Corporation, Limited.

Shipbuilding is more important in peace than in war; indeed, it is only by activity in times of peace that ships and especially crews can be ready to hand in the day of stress. Had it not been for the mercantile marine and a myriad of trawlers and seamen, the allied armies could not have been massed nor the allied nations fed. An American Ambassador in Great Britain has said: "There is no more glorious page in the history of the war than that contributed by their bravery and self-sacrifice in the face of known and constant danger, all the more terrible because it could not be foreseen. They made it possible to transport the armies of Britain and the United States to France and to provision them when there. They kept the commerce of the allied world alive and brought, not alone munitions to the troops, but food and fuel to the people of the allied countries. They are the men who defied and defeated the base iniquity of the German submarine campaign, and it is not too much to say that without their brave devotion the war would not have been won:" and the Admiral in command of the United States fleet, publicly declared that "without the British merchant seamen our army and navy would have been helpless." The share of the Maritime Provinces in this noble service is well known.

Nova Scotia, lying in the most favoured spot of the largest of the great fishing areas of the world, has from the first had boats and crews. Her fleet of fishing schooners is still growing; Lunenburg alone has 125; but to meet foreign enterprise on the Banks still more steam trawlers and fast fish-carriers from outside waters are needed. The fishing fleet is the proper school for young seamen.

With cradles full of sailors, and craftsmen in every inlet, with the land on the edge of the sea packed with coal, and with iron nearby, Nova Scotia could herself in time of need both build and man a mercantile marine and save the Dominion a yearly normal freight bill of fifty million dollars.

(NOTE.—All ships of iron and steel, building in the province and all machinery used in building the same are exempt from provincial taxation.)



Halifax Shipyards and Dry-dock

In 1928, 3 sailing vessels and 72 motor boats (net tonnage 2,288) were built, showing a slight increase on a minimum of 26 boats with a net tonnage of 1,704 in 1922.

COMMUNICATIONS

CABLE AND WIRELESS STATIONS

“Our new Arachne, with steel web unfurled,
You catch the wandering whispers of the world.”

The first transatlantic marconigram was sent from the Table Head station near Glace Bay in 1902.

The Atlantic cable stations are at Halifax, Canso and Sydney.

The radio-telegraph stations are these:—

Louisburg—owned and operated by the Canadian Marconi Company.

Sable Island and North Sydney—owned by the federal Government and operated by the Canadian Marconi Company.

Chebucto Head and Yarmouth—owned and operated by the federal Government. (Department of Marine).

Direction finding stations at:—

St. Paul island, Canso, Chebucto Head and Yarmouth—owned and operated by the federal Government (Department of Marine).

Radio beacon stations at:—

Sambro lightship, Seal island and the Lurcher lightship—owned and operated by the federal Government (Department of Marine).

Broadcasting to Fishermen.—Through the stations at Louisburg and the Sambro lightship, the Department of Marine maintains a special broadcasting service for the benefit of fishermen and twice daily, at advertised hours, messages are broadcast embodying such information as weather forecasts, storm warnings, market prices of fish, etc.

This service is further augmented during the summer months by the C.G.S. "Arras," which accompanies the fishing fleet, broadcasting similar information.

(Contributed by the Director of Radio Service.)

NOVA SCOTIA AND AERONAUTICS

In the spring of 1918 two aviation stations were established in Nova Scotia to increase the efficiency of the anti-submarine patrols on the Atlantic coast. With the assistance of the Imperial Government and the United States Naval authorities stations were operated until the Armistice.

With the advent of peace the forces engaged in this work were disbanded and the stations placed in charge of care and maintenance parties.

In 1919, the Halifax station was transferred to the Air Board and the North Sydney station was abandoned.

Dartmouth air station, situated on the eastern side of Halifax harbour, near its entrance, is maintained as one of the bases of the Directorate of Civil Government Operations. Since 1922 vertical and oblique air photography has been done for the Topographical Surveys of Canada in the counties of Digby, Yarmouth, Shelburne and other areas, from which maps are made. During 1929 a total of 144 hours flying time was occupied in air photography.

The Halifax Aero Club was formed in 1928 and received the government grant of two light aircraft. The membership of the club is 167 and during 1929 their flying time was 293 hours. The establishment of an up-to-date airport is under consideration by the municipal authorities of Halifax and \$190,000 has been voted to meet the cost.

(Contributed by the Controller of Civil Aviation.)

INDUSTRIAL DEVELOPMENT

The physical position of Nova Scotia, generally, offers great inducements to the industrial investor; it has a good share of water-power, and abundance of coal, plenty of raw material and many fine harbours where supplies from foreign countries, such as sugar-cane, cacao, tobacco, cotton, rubber and oil, can be laid down cheaply, and from which fleets of ships built in the province can sail abroad.

STATISTICS OF LEADING INDUSTRIES OF NOVA SCOTIA, 1928

—	No. of Establish- ments	Capital	No. of Employees	Value of products
		\$		\$
Iron and steel, their products, and ferro-alloys.....	21	32,159,611	2,612	17,349,270
Fish curing and packing.....	219	3,724,210	3,738	7,930,900
Saw mills.....	352	3,915,452	2,338	3,441,448
Biscuits and confectionery.....	11	4,437,146	1,270	3,439,530
Electric light and power.....	78	14,130,973	561	3,280,348
Butter and cheese.....	30	1,078,113	274	2,881,043
Hosiery and knit goods.....	4	3,606,214	578	2,248,578
Shipbuilding and repairs.....	13	10,999,345	728	1,972,433
Printing and publishing.....	31	2,033,158	643	1,923,854
	759	76,084,222	12,742	44,467,404
Total for all industries.....	1,167	138,809,331	19,222	84,948,608
In 1890 the figures were.....	10,495	19,730,736	34,944	14,905,913

*1928 figures only show those establishments employing more than 5 hands.

Apart from those dependent on the four big industries, fishing, mining, forestry and agriculture, there are other important manufacturing industries established mainly in Halifax, Dartmouth, Truro, Amherst, Windsor, Oxford, and Yarmouth such as:—

	No. of Establishments
Aerated beverages.....	38
Sugar and oil refineries.....	2
Wool products.....	16
Freight cars.....	2
Paint and varnish.....	2
Harness and leather goods.....	7
Trunks and bags.....	2
Furniture and mattresses.....	17
Pianos.....	1
"Nova Silk" (artificial).....	1
Condensed milk and coffee.....	1
Skis.....	6
Soap.....	1
Chocolate and confectionery.....	9
Hosiery and underwear.....	4
Cotton textiles.....	1
Hats and caps.....	1
Boots, shoes and larrigans.....	8
Oiled clothing.....	2
Fertilizers.....	5
Skates.....	1

An analysis of the Trade Directory for Nova Scotia (1929), does not reveal the manufacture of certain products which would seem natural to the resources of the province, viz.: fishing nets, fur garments, leather gloves and mitts, abrasives, medicinal cod liver oil, paper milk bottles.

Eel-grass.—This species of seaweed (*zostera marina*) is found in large quantities along the coasts of Nova Scotia. Formerly used mainly as a stuffing for upholstery it is now in great demand as a material for insulation against cold, heat and sound. Until quite recently it has been collected and shipped in its raw state to the United States for the manufacture of an insulating quilt used in the construction of many large buildings. It is also re-imported into Canada in manufactured form.

The utilization of part of the abundant supply in Nova Scotia has now been effected in Canada by the construction of an up-to-date plant at Trenton, and the product known as "Building Blanket" is already being used in important new buildings such as King's College, Halifax, and is likely to find an export market in Great Britain.

Owing to the low cost of eel grass compared with other insulating materials it is specially useful in keeping the private home warm in winter and cool in summer when applied beneath the roof and flooring or in the studding of the side walls, either in its crude dried state or in blanket form. Eel grass has the advantages of being rot and insect proof, and being non-inflammable. It was found, in fact, during 1893, in a New England house where it had been packed in the studding about 1635.

Smaller Industries.—There are several small industries suited to the province which might be judiciously revived, perpetuated or newly developed. Such are the home spinning and weaving of flax and wool, and the making of pottery and hardwood articles for domestic use. There are still many people who prefer what bears a stamp of individuality to machine-made woollen-linen textiles or to clay ware and furniture turned out by the million yards and the thousand pieces.

As shown elsewhere, though the flax industry had nearly, if not quite, died out, the climate and soil can grow a flax equal to any. All that is required to revive the industry is a renewed inclination of home-dwellers to what a great writer calls "the art of queens."

The spinning and weaving of wool is in somewhat better plight. Wool of a fine grade is still produced and will be still finer as the breed of sheep is improved. It is only a few years since pieces of Nova Scotian homespun which "never wore out" were snapped up by the smart west-end London tailors, and they would be equally sought for now were they to be had; now, however, the man who knows where to pick up even 8 yards of 27-inch cloth, grown, spun and woven on some Cape Breton farm, is likely to keep the secret to himself.

The hand-made pottery craft is one that must be newly developed. Suitable clays are on the spot, and even if Nova Scotians had a bias for what is often carried as ballast on ships from Britain or is machine-made in Ontario, how many of the 60,000 tourists would not gladly take home some simple well-designed jug or bowl wrought on a Nova Scotian potter's wheel?

The working up of the Nova Scotian hardwood into specialties is on a somewhat different plane, though here



Flax Spinning—A Home Industry

too a well-joined arm chair, or a neat book-shelf, would be a happy memento to the visitor of some past summer trip; and, when so many farms have a hardwood lot and a nearby old mill-site for power, machine-made articles should bring in a good return. Let the young folks take advantage of the manual training and art-schools now generally available, and the skill they gain for handicraft will not be thrown away when they are at home.

The essential, however, for the success of any or all of the above crafts is co-operation under the guidance of a central office directed by a manager of business ability and enthusiasm. Let it be once known that there is some branch of the Department of Industries or some handicraft society of Nova Scotia having a display-room for samples of hand-made linen, table covers, portières, rugs, coverlets, homespun cloth, jars, jugs, bowls, furniture, or even glassware from our white silica sands, the visitor and native son alike will see that Nova Scotia can turn the smallest of her resources into things of beauty and profit.

The paragraphs above were written for the 1928 edition of this booklet, and it is interesting to quote the following from the 1928 report of the Nova Scotia Department of Natural Resources:—

“Four handicraft exchanges were opened in the province during the year, to provide a market for the sale of handmade articles. These exchanges were at Port Maitland, Yarmouth county; Bridgewater, Lunenburg county; Amherst, Cumberland county; and North Sydney, C.B. They were open from June to the end of September. These exchanges were open to all women in Nova Scotia and were operated on a commission basis. Goods to the amount of \$985 were sold, and it is felt that with such a promising start, this work might be continued to advantage. The silhouette of a full-rigged ship, and the letters, W.I.N.S. were used as a distinctive sign with the slogan “Buy Nova Scotia Products.”

INCORPORATION OF JOINT STOCK COMPANIES

In Nova Scotia companies may be incorporated either (1) under the Nova Scotia Companies Act or (2) under a Dominion charter.

(1) Under the provincial Act any three or more persons by subscribing their names to a memorandum of association may form a company for any lawful purpose except a banking, loan, trust or insurance company.

The Act recognizes three classes of companies, viz.: those limiting liability of its members to the amount of the shares (paid-up or unpaid) held by them; those limiting the liability to such amount as the members may respectively undertake to contribute to assets of the company if wound up; and those with unlimited liability of its members.

The fee for incorporation varies according to the capital, the minimum being \$50 for a capital of \$5,000 and under.

A memorandum and articles, if any, of association are to be filed with the Registrar of Joint Stock Companies who issues a certificate of incorporation.

Every company operating in Nova Scotia must be registered under the "Domestic, Dominion and Foreign Corporations Act," the fee ranging from \$10 minimum to \$200 or more.

A tax of 1/10 of 1 per cent is to be paid by every company having capital of \$25,000 or over on such capital or on such part thereof as is used in Nova Scotia.

(2) Under the Companies Acts of the Dominion the Secretary of State may grant a charter to any number of not less than nine who apply.

Operations may not begin until 10 per cent of the authorized capital has been subscribed and paid for. The charter is forfeited if not used within 3 years after granted.

Liability of shareholders limited to the amount unpaid on their shares.

Any valid company incorporated under Canadian provincial Acts or under the laws of Great Britain or a foreign country may apply for letters patent.

If a company intends to operate in more than one province a Dominion charter is essential.

Fees for incorporation are \$100 for capital of \$50,000 or less; \$100 plus \$1 for each \$1,000 up to \$200,000; \$250 plus 50 cents for each \$1,000 up to \$500,000; \$400 plus 20 cents for each \$1,000 in excess of \$500,000.

TAXATION

Taxes are of four kinds:—

Dominion, including income tax, war taxes, stamp tax, custom duties and excise.

Provincial, including succession duties, taxes on public utility associations, and incorporated companies, licences, etc.

Municipal taxation in the form of an annual tax on the assessment value of property to meet the local expenditure for the current year. This varies according to the needs of the towns; in Halifax for 1928-29 it was \$36.69 per head of the population.

County and rural taxation is similar in form and may vary from \$1.25 per \$100 of assessment value to \$5 or more.

In 1927 Nova Scotia raised \$12 per head of its population compared with an average of \$16.50 for all the provinces and a range of \$9.65 to \$35.23. There is no provincial tax on industrial plants other than the fees for registration of joint stock companies and the tax of 1/10 of 1 per cent on the paid-up capital exceeding \$25,000. The bonded debts of Nova Scotia in 1927 were the provincial debt of \$41,708,457 and the municipal debts of \$28,381,616. In 1928 the public accounts of the Province showed a revenue of \$6,933,629 and an expenditure of \$7,543,077. In 1929 the revenue derived from motor vehicle fees and gasoline tax was \$1,449,000.

Dominion Income Tax.—The following are to be paid, deducting 20 per cent of the tax:—

On \$2,000—2 per cent;

On \$2,000 to \$3,000—3 per cent;

\$3,000 to \$4,000—4 per cent;

and so on at the same progressive rate per \$1,000 up to \$20,000. On above \$20,000 to \$25,000, 21 per cent, and at the same rate of progression per \$5,000 up to \$100,000.

On above \$100,000 to \$110,000—37 per cent;

On above \$110,000 to \$120,000—38 per cent;

and at the same rate of progression per \$10,000 up to \$150,000. Above \$150,000 an increase of 1 per cent for each additional \$25,000. Above \$200,000 an increase of 1 per cent for each \$50,000. Above \$500,000 the tax is 50 per cent.

Corporations pay 8 per cent on income exceeding \$2,000.

Exemptions.—

\$1,500 if tax-payer is unmarried.

\$3,000 if tax-payer is married or householder.

\$3,000 if tax-payer is unmarried or widow or widower with certain dependents.

\$500 for each dependent child under 21 years.

A comparison of income taxes levied (1930) in Canada and Great Britain is interesting: For example, in Canada a married person or householder having an income of \$4,000 and two children younger than 21 pays no income tax; in Great Britain he or she pays \$396 (£79-6-3) if both children are younger than 16, or if above that age are receiving full time instruction at school or college (otherwise the tax is \$520 (£104-1-3)).

Thus a married person or householder domiciled in Canada instead of in Great Britain saves 9.9 per cent of a \$4,000 income (or possibly 13 per cent).

Again, in Canada a married person or householder without children pays no income tax on \$3,000 (£600). In Great Britain the tax is \$300 (£59-1-6), *i.e.*, 10 per cent of the income.

COST OF LIVING AND WAGES

The average weekly cost of 29 staple foods, fuel, lighting and rent for a family of five in 60 cities of Canada in December, 1913, 1920, 1929, was:—

1913.....	\$ 14.02
1920.....	25.67
1929.....	22.11

Average retail prices in Nova Scotia of staple foods, fuel, rent, etc., in December, 1929:—

		cents
Beef, sirloin, steak.....	per lb.	36.3
Mutton (roast).....	"	28.0
Pork (fresh leg).....	"	29.9
Bacon (breakfast).....	"	38.4
Cod (fresh).....	"	14.6
Herring (salt).....	per doz.	54.2
Lard (best).....	per lb.	22.5
Eggs (fresh).....	per doz.	64.6
Milk.....	per qt.	11.8
Butter (creamery).....	per lb.	51.1
Cheese.....	"	32.5
Flour.....	"	5.8
Oats (rolled).....	"	6.6
Rice.....	"	10.0
Potatoes.....	90 lbs.	\$1.75

		cents
Jam.....	4 lbs.	62.9
Marmalade.....	"	59.0
Sugar (granulated).....	per lb.	7.6
Tea.....	"	68.8
Coffee.....	"	65.3
Cocoa.....	per ½ lb.	28.5
Raisins (seeded).....	15 oz. pkt.	15.3
Currants.....	per lb.	18.9
Wood, stove lengths (hard).....	\$10.35	per cord
" " (soft).....	7.15	"
Coal (soft).....	9.27	per ton
Rent of 6-roomed house with modern conveniences.....	14.92	per month

FARM WAGES IN NOVA SCOTIA, 1920 AND 1928

Summer Months—	Wages Board		
Men—1920.....	\$49	\$24	= \$73.00 a month
1929.....	38	19	= 57.00 "
Women—1920.....	21	17	= 38.00 "
1929.....	19	15	= 34.00 "
<i>By the year—</i>			
Men—1920, wages with board.....	\$735.00		a year
1929, " ".....	605.00		"
Women—1920, wages with board.....	408.00		"
1929, " ".....	391.00		"

As a rule farmers do not keep help by the year except on the larger farms where there are tenant houses. Married men are given house rent free, fuel (wood) and certain farm produce but supply their own house furnishings, groceries, and meat. Single men are provided with board and lodging in addition to wages.

WAGES AND HOURS OF LABOUR IN OTHER INDUSTRIES

Average in Halifax, 1929		Wage	Hours per week
		\$	
Bricklayers.....	per hour	0.75	44
Carpenters.....	"	0.73	44
Electrical workers.....	"	0.80	44
Painters.....	"	0.73	48
Plumbers.....	"	0.85	44
Stone cutters.....	"	0.90—1.10	44
Labourers.....	"	0.35—0.45	44 to 54
<i>Mining wages in Nova Scotia, 1929—</i>			
Miners (contract).....	per day	7.22	8
Miners (hand).....	"	5.05	8
Labourers (underground).....	"	3.90	8
Labourers (surface).....	"	3.80	8½

LABOUR ORGANIZATION

Labour organization in Nova Scotia dates from 1864 when a trade union of metal workers was formed.

In 1902 there were 73 labour unions in the province. In 1929 there were 141 branch unions, of which 107 reported a membership of 16,601. Of these 141 branches 100 are international and 41 branches of "Canadian Central Labour" organizations.

Members of trade unions in Nova Scotia number between 5 and 6 per cent of the present total for Canada, which in 1929 was 319,476, distributed in 2,778 branches, compared with the record year 1919 of 378,047 in 2,847 branches.

The Provincial Miners' Union, organized in 1879, was probably the first trades union in Canada granting charters. In time the organization of the United Mine Workers of America entered Nova Scotia and formed local unions in the mining districts. In 1917 the two rival unions combined to form the Amalgamated Mine Workers of Nova Scotia, which later became affiliated with the United Mine Workers of America, and formed District 26 of that organization. In 1928, there were 26 local unions of the United Mine Workers of America in District 26, which includes New Brunswick as well as Nova Scotia, but there are no branches in the first named province.

The Trades and Labour Congress of Canada, with which District 26 of the United Mine Workers of America is affiliated, is the largest central labour organization in Canada. Its activities are confined largely to promoting legislation in the interest of labour, and the unions affiliated with it are affiliated also with the American Federation of Labour and are the so-called "international unions." The Trades and Labour Congress is a member of the International Federation of Trade Unions whose headquarters are at Amsterdam, and by an exchange of delegates annually with the British Trade Union Congress, it keeps in touch with that organization. Since the establishment of the International Labour Conference as a part of the machinery of the League of Nations, the Trades and Labour Congress has sent a delegate each year to the annual sessions of that body at Geneva, and in 1928 Mr. Tom Moore, the President

of the Trades and Labour Congress, was elected as one of the workers' representatives on the governing body of the International Labour Office.

Workmen's Compensation.—An Act relating to workmen's compensation was passed by the Nova Scotia Legislature in 1915, with subsequent amendments, under which a provincial board administers an accident fund made up exclusively of compulsory contributions from employers grouped in classes and assessed according to the hazard of the industry.

Employment Agencies.—By an Act of 1920, all private employment offices in Nova Scotia were abolished except those that may be exempted by an Order in Council. No person or firm may receive, directly or indirectly, any fee for giving information regarding employers seeking employees or vice versa under a penalty of \$10 to \$25. The Nova Scotia branches of the Employment Service of Canada are at Halifax, New Glasgow and Sydney.

Women and Children.—A Minimum Wage Act for women employed in industrial occupations was passed by the Nova Scotia Legislature in 1920. A board to administer the Act was appointed in March, 1930.

No boy or girl under 14 may be employed in a factory, except during the summer months in the gathering or preparation of fruits or vegetables for canning.

No boy or girl under 16 may be employed in a shop for more than 8 hours in one day nor for more than 4 hours on a Saturday.

No child under 16 may labour in any business whatever or street trade during school hours (9 a.m. to 3.30 p.m.) unless provided with a satisfactory school certificate.

The minimum age for the employment of boy labour in coal mines was raised in 1923 from 12 years to 16. In 1927 the age for boys employed about metal mines or quarries was raised from 12 to 16.

Welfare Work.—As an example of the increased attention paid to the welfare of employees in recent years, reference may be made to the Department of Industrial Relations formed by the British Empire Steel Corporation in Cape Breton in 1920. The Safety and First Aid Division reports all danger hazards and organizes first aid classes. These are attended in winter by some 300 men, most of

whom earn the certificate of the St. John Ambulance Association. It has also established first aid rooms at the various collieries and machine shops, with the latest hospital appliances needed for emergencies. The employees' service division engages a special inspector, who attends to sanitary and cleaning up matters and to improvement of conditions in the collieries, boarding houses and homes. The employment division makes it no longer necessary for men to spend days in travelling among the score of mines looking for work, but provides central bureaux of information.

CO-OPERATIVE ORGANIZATIONS

The co-operative movement had no footing in Canada before 1860. The first societies were the retail stores formed by the miners in Nova Scotia by the men who had emigrated from Great Britain and had there learned the principle of co-operation. These early enterprises had a very hard struggle.

Agricultural co-operation in Canada grew rapidly from about 1910, especially in the West, but as late as the last decade of the nineteenth century Nova Scotian fruit farmers were felling their apple trees for firewood rather than face the loss of profit and a frequent deficit caused by the middlemen who monopolize purchase, sale, and transportation. Since the application of co-operative methods the shipped apple harvest increased from 24,000 barrels to 2,000,000 in 1911. One of the great difficulties that stood in the way of co-operation was the lack of the capital needed by the societies to act as credit associations which would enable the grower to hold his fruit in spite of the temptation to accept cash down, however little, from the visiting buyer.

One of the best examples of central co-operative associations in Canada is the "United Fruit Companies of Nova Scotia, Ltd.," which had to face formidable obstacles when first founded in 1910. In 1911 it began shipping apples to Europe; it now has some 50 branches, canning, preserving, cider vinegar, apple drying factories and a branch for the purchase of flour, seeds, fertilizers, etc. In 1911 alone it saved \$6,000 to its members in the cost of fertilizer.

There are now 42 farmers co-operative societies in Nova Scotia and 4 co-operative stores, operated by farmers clubs. There are also 9 co-operative creameries. The chief outside co-operative associations operating in Nova Scotia are the "Co-operative Wool Growers, Ltd.," the "Maritime Poultry and Egg Exchange" with headquarters at St. John, New Brunswick and the "Co-operative Commerciale Acadieane" with headquarters in Montreal.

Though not strictly co-operative associations, there are now 176 agricultural societies organized under the Act for Encouragement of Agriculture, having 6,709 members in 1928 and entitled to the government grant of \$18,000 a year. Their origin traces back to the 37 societies of 1864, and later to the Nova Scotia Farmers Association founded in 1895.

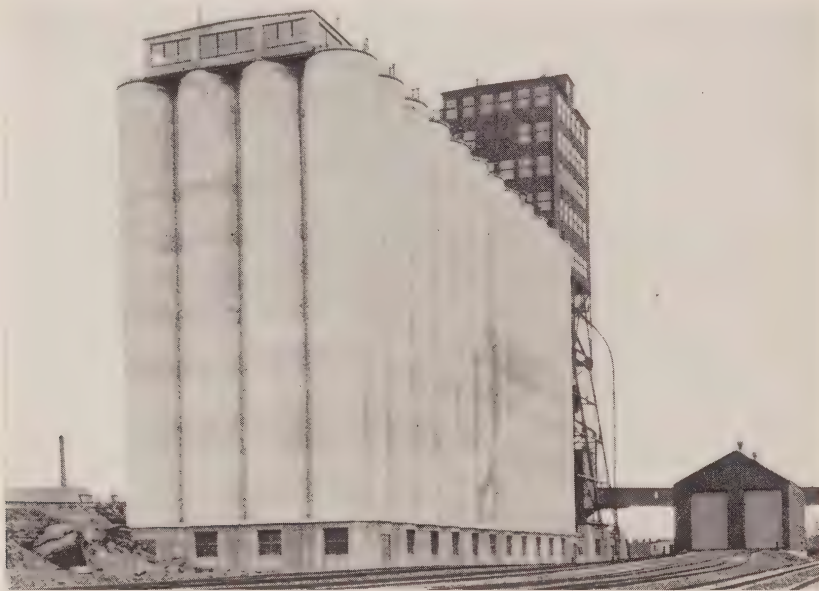
That the co-operative principle is growing vigorously in Nova Scotia is evident from the existence in 1928 of 38 live stock shipping associations, 40 egg circles, 9 county farmers' associations, 21 stations of the Fishermen's Federation of Nova Scotia, 20 boys and girls' calf-feeding clubs, 11 boys and girls' swine clubs, and 17 boys and girls' poultry clubs, the Nova Scotia Dairymen's Association, the Nova Scotia Poultry Association, Canadian Guernsey Breeders' Association, and the Acadian Society.

TOWN PLANNING

The laying out of Sydney by the Royal Engineers in 1784 was probably the first case of town planning by the British in Canada. The Town Planning Acts of the Nova Scotia Government (1915) make suitable provisions for all future urban and rural development in the province. Under these Acts every local authority shall create a local board, consisting of a mayor or warden, two other ex-officio members of the council, and not less than two ratepayers to be appointed by the local authority for a term of three years. The board must prepare a town planning scheme for lands within its area, or else a set of town planning by-laws.

The planning proposed is largely of undeveloped areas, and, so far as relating to areas already built upon, it seeks to regulate voluntary reconstruction by the owner rather

than make reconstruction necessary at the public expense. The essential object of the Acts is that the area shall be planned in advance of construction so that any development may work out in harmony with a well thought out scheme. The report of the town planning committee of the Dominion Land Surveyors for 1930, referred to the Maritime Provinces thus: "The Maritime Provinces were earliest in the field with Provincial town planning Acts, but failure to appoint provincial officers to carry out the acts has left them sterile and unprofitable."



Canadian National Grain Elevator at Halifax Ocean Terminals

Under the Nova Scotia Housing Acts, nearly one and a half million dollars was spent by the ten local commissions on the erection of 392 houses.

FOREIGN TRADE

Halifax Harbour.—There are on the map of the Western Hemisphere certain ports destined for world trade and growth by a combination of fine harbourage and geographical position. Among these are New York, New Orleans, Rio de Janeiro, San Francisco, Vancouver and Halifax.

Historically, Halifax has had her share of world history since Colonel Cornwallis on June 21, 1749, sailed into Chebucto Bay on the sloop *Sphinx* and penned the despatch: "Our officers agree that the harbour is the finest they have ever seen." Its part in the Seven Years' war, in the wars with Napoleon, and in the war of 1812 as the British naval base in the North Atlantic is perhaps better known to most than its history in the years of the great war. Here fleets assembled for the transport of Canadian, Anzac and United States troops and Chinese coolies, and it was no uncommon sight to see twenty to thirty ships leaving in one convoy.

Commercially, however, Halifax had to be content with her position as a coaling base and port of call, or with a thriving but spasmodic West Indian or Atlantic coast trade, or with that more regular local commerce on the St. Lawrence river and gulf, until transcontinental railroads linked her with the west.

But times have changed since the Royal William, built at Quebec, crossed the Atlantic from Pictou, N.S., in 1833, and since thirty-five days was good time to Liverpool. With the change to boats out of sight of land for four days only, and a dozen steamship lines freighting to all ports, Halifax began to take on the attributes of a modern port. In 1912 the Government planned the new ocean port for the Canadian National Railways' transcontinental lines, and in 1928 the Halifax Harbour Commission was established.

Halifax harbour is a masterpiece of nature. The inland "Bedford Basin," in area 8 miles by 5, is connected by a deep channel, "The Narrows," with an outer bay.¹ This bay forms the outside harbour, in area about 10 square miles, ice free at all times, siltless, free from troublesome currents, with a tidal rise of only 4 to 6 feet. From this harbour a straight deep channel leads for a steaming distance of about one-half hour from the wharves to the ocean entrance $5\frac{1}{2}$ miles wide and protected by islands at the mouth.

¹ The idea that the ice sheet carved out the valleys which indent the southern coast is a mistaken one. These valleys are plainly the work of rain and rivers during the period preceding the ice age, drowned and subsequently altered, in detail only, by the activity of the ice sheet. They are not true glacial fiords like the famous fiords of Norway and Alaska. (Geo. Surv., Mem. 140, p. 103.)

The "Halifax Ocean Terminals" are the property of the Dominion Government and the Atlantic Terminus of the Canadian National Railways, the great system that ramifies throughout Canada and extends to the Pacific at Vancouver and Prince Rupert.

Within the terminal area are the recently built Union Railway station, a model Immigration building, a 2,200,000 bushel elevator, the Nova Scotia Public Cold Storage Terminals Ltd., covering 8 acres, and the new Nova Scotia hotel, rivalling the Lord Nelson recently built by the Canadian Pacific Railway in Halifax city.



North Sydney Harbour

The continuous quay wall, with depth of 45 feet at low water alongside, is the only quay in Canada at which the biggest ocean liners can berth. It has 16 berths averaging 622 feet in length. In 1929, 1,600 ships of gross tonnage 15,700,000 were accommodated. Grain galleries and grain berths enable 5 ships to be loaded at the rate of 15,000 to 30,000 bushels per hour. Nearby are the Halifax Shipyards, a subsidiary of the Dominion Steel and Coal Corporation, supplying repairing, graving dock and ship-building facilities.

The great work of the Halifax Ocean Terminals is still in course of development by the Halifax Harbour Commission which has been entrusted with the management, and doubtless the port of Halifax will retain its claim to have the lowest port charges of any rival on the North Atlantic coast.

COMPARATIVE TABLE OF DISTANCES FROM HALIFAX AND NEW YORK TO SIX TRADE CENTRES

	Nautical miles from Halifax	Nautical miles from New York
Liverpool...	2,485	3,036
Pernambuco	3,541	3,678
Rio de Janeiro	4,611	4,748
Montevideo	5,586	5,723
Buenos Aires.....	5,701	5,838
Cape Town.....	6,423	6,795

Sydney Harbours.—The Sydney harbours, being in the heart of the coalfields, are destined in time to have a full share of Canadian trade. The drift-ice which blocks the entrance in certain winds is troublesome for about two months only. The entrance from the ocean is three miles wide, its length of five miles narrowing to one-half mile between two protecting bars, where the mean depth is 39 feet (L.S.W.T.). North-Sydney harbour lies one-half mile within this narrower entrance. The channel to North Sydney is 36 feet deep and more than a mile wide, and from North Sydney to Sydney 40 to 45 feet deep and three-quarters of a mile wide. Pier accommodation has now been provided for vessels of the largest draught. For the year 1928-29, 6,556 ships were returned as inward or outward bound.

Sydney harbour has an area of 15 square miles and a depth of full 40 feet; it has miles of good foreshore owing to the projection of the land, fog is almost unknown, and, being a natural harbour, there are at present no charges for maintenance.

STEAMSHIP LINES TRADING TO AND FROM HALIFAX

Ocean sailings are made from Halifax to—

- (1) *British Ports*: Liverpool, Southampton, Plymouth, London, Glasgow, Belfast, Cardiff, Swansea, Cobh (Queenstown).
- (2) *French and European Ports*: Cherbourg, Havre, Bordeaux, Antwerp, Gothenburg.
- (3) *Australia and New Zealand*.
- (4) *South American Ports*: Rio de Janeiro and Santos (Brazil), Montevideo (Uruguay), Buenos Aires (Argentine), Demerara (Br. Guiana), Paramaribo (Dutch Guiana).
- (5) *West Indies*: Eastern and Western groups, Bermuda, French West Indies and British Honduras, Cuba.
- (6) *Newfoundland*: St. John's.
- (7) *United States*: New York.

The lines operating in (1) are the Cunard, the White Star, Canadian National Steamships, Furness, Anchor-Donaldson (Glasgow—winter), Leyland (London—winter).

In (2) Cunard, White Star, Red Star (winter), Swedish American.

In (3) Canadian National Steamships, New Zealand Shipping Co.

In (4) Canadian National Steamships.

In (5) Canadian National Steamships, Ocean Dominion, Pickford and Black (Santiago and Kingston).

To implement the agreement of 1925 made between Canada and the British West Indies Governments the five new "Lady" ships of the Canadian National Steamships built for a first class passenger service besides second, third and freight are now on their regular routes. The steamers "Lady Nelson," "Lady Hawkins" and "Lady Drake" make fortnightly sailings from Halifax to Bermuda, St. Kitts, Nevis, Antigua, Montserrat, Dominica, St. Lucia, Barbados, St. Vincent, Grenada, Trinidad, Demerara; the "Lady Somers" and "Lady Rodney" make fortnightly sailings from Halifax in winter only to Bermuda, Bahamas, Jamaica and connect with a C.N.S. steamer for Belize. The "Ladies" have each a deadweight tonnage of 6,400 tons and accommodate 103 first class and 132 other passengers.

Besides the above line constantly operating, Halifax is a port of call when occasion offers for the Ellerman-Bucknell, Weir Line, and Bank Line steamers, freighting to and from India and East Africa, the North German Lloyd and Hamburg-American, the French line, the Holland America, the Atlantic Transport, Furness-Withy, Scandinavian or Danish lines from Copenhagen, Oslo, Danzig, etc., the Fabre Line from Marseilles and Greece, and the Cosulich Line from Italy.

TRADE WITH BRITISH WEST INDIES, BERMUDA, BRITISH
HONDURAS AND BRITISH GUIANA

The development of trade with the West Indies and contiguous British possessions and the direct steamship service on which this trade relies concerns Nova Scotia perhaps more than any other province of the Dominion.

The corner stone of the trade is the Canada—West Indies—Bermuda—British Guiana—British Honduras Agreement made in 1925 and remaining in force for 12 years after its proclamation.

The general principle of this agreement is that Canada allows a preference of not less than 50 per cent of the duty imposed on similar goods imported from foreign countries and, reciprocally, that Canada is allowed a similar preferential tariff on Canadian produce. Implementing this general principle was provision for a direct and regular steamship service to reach all the colonies signatory to this agreement. How firmly this service has been established within the last two years has been shown above. Substantial sums to support the service are contributed annually by all the larger islands, British Guiana, British Honduras and Bermuda.

The West Indies and the British possessions on the mainland already take the bulk of Nova Scotian cured fish and there is a constant demand for such products as Nova Scotia does produce or could produce, viz.: flour, oats, bacon, meat, butter, cheese, condensed milk, potatoes, apples, canned goods, hay, lumber, paper, hardware, machinery, live stock, ammonium sulphate and bunker coal. The ships on return should carry full cargoes of goods which Canada has to import and which the British possessions produce, viz.: sugar, molasses, rice, bananas, oranges,

grape fruit, lime juice, cocoa, coffee, logwood, mahogany, cotton, spices, rubber, asphalt, and rum, and of goods which they could produce or do now produce in small amount, viz.: tea, lemons, pineapples, sago, arrowroot, tortoise shell, sponges, nutmegs, and early vegetables.

If the demand were proportionate, Nova Scotian trade would follow the line of least resistance and flow to the West Indies as readily as to the western provinces. Halifax is as near to British Guiana as to Brandon, Man. Nova Scotia is fortunate in having the magic isles of the West Atlantic within cheap and easy access. The palmy days of the sugar trade may return, and enterprise may find scope in harvesting the staple products of the tropics and be interested in pearl-oyster beds, sponge gardens, and turle farms.

At a time when conditions are elastic for readjustment of trade relations and further marketing of Empire products it should not be forgotten that the West Indies with first rate harbours in Antigua, Saint Lucia and Grenada are on the highway to the Panama canal and form a natural bridge for the passing to and fro of Canadian commerce.

Nor is it an advantage either to the West Indies or to Canada that they should pay toll to the United States as middlemen of many million dollars a year for produce when direct ocean transit is now available.

EXPORTS AND IMPORTS, 1928

From Canada to	British West Indies.....	\$ 14,923,325
“ “	Bermuda.....	1,364,052
“ “	British Honduras.....	604,613
		<hr/>
		\$ 16,891,990
To Canada from	British West Indies.....	\$ 17,349,312
“ “	Bermuda.....	53,642
“ “	British Honduras.....	157,925
		<hr/>
		\$ 17,560,879

British Guiana.—Valuable as is the trade with the West Indies region in general and capable as it is of indefinite development, British Guiana, the only Imperial possession in South America, claims attention as the richest and, until recently, perhaps the least known tropical part of the Empire, whose trade may in time prove of particular importance to Canada.

The staple products are sugar and molasses, rice, copra, and cocoanuts, coffee, hardwood, hides and bauxite. The bauxite was formerly treated in the United States and re-exported to Chicoutimi, P.Q., in the form of alumina, but the untreated ore is now being shipped direct from Georgetown to the Saguenay.

Trade.—The bulk of the foreign trade is with Great Britain, but Canada is a good second. The total trade of British Guiana in 1929 was valued at \$21,096,714.

Exports to—		
Great Britain and possessions.....	41	per cent
Canada.....	37	“
United States.....	7	“
Imports from—		
Great Britain and possessions.....	62.0	“
Canada.....	20.5	“
United States.....	12.5	“

The two largest items of imports from the United States are cotton manufactures and machinery.

The imports to British Guiana of interest to Nova Scotia are ammonium sulphate, barley and oats, butter, cheese and condensed milk, cement, cocoa, cordage, cotton goods, cured fish, hams and lard, pine lumber, oils (kerosene and gasoline), potatoes, soap, and salt.

TRADE WITH WEST INDIES, OTHER THAN BRITISH, AND WITH CENTRAL AMERICA, SOUTH AMERICA AND MEXICO

This trade has increased greatly in the past few years, and should continue to increase in proportion to further direct transport by sea from and to Canadian ports. In 1928, of total exports valued at \$35,753,042 to these foreign countries from Canada, no less than 83 per cent were shipped through the United States, and of imports into Canada, worth \$36,507,336, 13 per cent.

Of the countries in question, those exporting more than a million dollar value to Canada in 1928 were in round figures:—

	Million Dollars
Argentina.....	10
Colombia.....	7 $\frac{1}{2}$
Cuba.....	5 $\frac{1}{2}$
Peru.....	5 $\frac{1}{2}$
Santa Domingo.....	2 $\frac{1}{2}$
Brazil.....	2
Mexico.....	1



A Holiday Jaunt in Nova Scotia

Of 16 other countries, Dutch West Indies and Dutch Guiana together shipped half a million and the 14 others $2\frac{1}{2}$ millions.

Of the countries importing from Canada, Argentine took 11 millions, Cuba $5\frac{1}{2}$, Brazil 5, Mexico $2\frac{1}{2}$, Colombia $1\frac{3}{4}$, Uruguay $1\frac{1}{2}$, Venezuela $1\frac{1}{2}$, Chile $1\frac{1}{2}$, Peru $1\frac{3}{4}$, Panama 1. Dutch West Indies and Dutch Guiana took \$280,000; French West Indies, \$371,511, and 11 others $2\frac{1}{2}$ millions.

The Commercial Intelligence Journal of the Department of Trade and Commerce, Ottawa, publishes a supplement which gives detailed information as to ocean transfer, credits, exports, competition, packing, language, precaution and other facts, without a knowledge of which no exporter may expect success.

Banks.—In the West Indies, Central America and South America the Royal Bank has 100 branches; the Bank of Nova Scotia has 24 in the West Indies; the Canadian Bank of Commerce 4 in the West Indies, 1 in South America, 1 in Mexico; and the Bank of Montreal 7 in Mexico.

South African Trade.—The Elder-Dempster Line receives a subsidy from the Dominion Government of \$125,000 a year for a monthly service to South African ports. Halifax is not a port of call, but freight is shipped from West Saint John in the winter, and Montreal in the summer. It is proposed to increase the subsidy in return for an expansion of the service to East African ports.

RECREATIONAL RESOURCES

FISHING AND SHOOTING

To those who look for sport with rod and gun Nova Scotia offers unusual chances and abundant variety. Thanks to wise government protection of fish, bird and beast and to natural environment, the province is now well stocked with moose, caribou, deer, hare, rabbit, raccoon, geese, duck, partridge (ruffed grouse), wood cock and snipe, salmon, ouananiche, brook trout, sea and lake trout, swordfish and tuna.

Moose are plentiful throughout the province. Deer were introduced in 1926 and have multiplied since very

rapidly. In 1918, 69 were killed; in 1923, 147; in 1928, 987; and in 1929, 1,316.

Ruffed grouse are now numerous owing to a close season for three years. The best of woodcock coverts are to be found in this province. Yellow legs and Wilson snipe are common. Nova Scotia, being a land of a thousand lakes, offers duck-shooting unexcelled. Its many fjords and bays protected by islands shelter countless shore-birds. It is believed that Nova Scotia is the only place where the Canada goose over-winters, a vast flock taking up its winter quarters in the sheltered waters of Queens and Shelburne counties. To protect and attract this beautiful game-bird, sanctuaries have been established between Liverpool and Shelburne.

Salmon and Trout.—Nearly all the large streams in Nova Scotia abound with salmon and trout. In August, 1927, a $52\frac{1}{2}$ pound salmon was taken with a fly in the Margaree river. Surface salmon fly-fishing begins late in April in rivers like the Tusket, Clyde, Medway, Indian, Musquodoboit, Sheet Harbour and St. Mary's, and continues in the Cheticamp, Margaree, etc., in Cape Breton island, until mid-September. For the Margaree (Inverness), St. Mary's (Guysboro), Musquodoboit (Halifax), Medway (Queens) and Tusket (Yarmouth), fishermen take up quarters at Baddeck, Sherbrooke, Musquodoboit Harbour, Charleston, and Kemptville, respectively. Liverpool, in Queens county, is a good starting point for the Mersey river system with 600 square miles of watershed, which by connecting Rossignol, Kejimkujik (Fairy) lake, and Fisher's lake, provides a good combination of canoeing and trout fishing with access to the fine game country to the north. Grand lake in Halifax county is a special place for the gamey land-locked salmon (ouananiche).

The *salmon* season for angling on the mainland of Nova Scotia, with the exception of the streams that flow into the straits of Canso and Chedabucto bay, is from February 1 to August 31, both dates included; on the above streams and on Cape Breton Island from June 1 to October 15. Land-locked salmon season, April 1 to September 30.

The season for *trout* begins May 1, and ends September 30, except in Pictou and Antigonish counties, where the season is from April 1 to September 30. In the southwest

counties, April, May and September are the best for trout fishing, the absence of cold springs and brooks tending to make the water too warm in July and August. Anglers' permits cost \$5, and may be had from the local fishery officer.

There are no preserved waters in Nova Scotia.

Tuna.—To land a giant leaping tuna with rod and line is no mean feat and is done by few, though tried by many. The record fish, weighing 760 pounds, was caught



Trout Fishing in Kejimikujik (Fairy Lake) Region

at Great island near Port Medway, Queens county, by the guide L. D. Mitchell. Port Medway is also good for salmon and swordfish. Tuna fishing is an attraction also inside St. Margaret bay, at Lockeport and Liverpool and in Cape Breton at Mira bay, St. Ann bay reached by water from Sydney, and at Arichat.

Swordfish.—This fish, which may weigh 600 pounds, is harpooned while basking on the surface. When struck by the harpoon the line, attached to a buoy-cask thrown overboard, holds him till his dangerous struggles are over.

This exciting sport can be had at the interesting old French settlement of Arichat, at Port Medway, at Halifax, and at St. Peter's bay, where the short canal admits boats into the Lower Bras d'Or lake.

Moose, Deer, etc.—One of the best centres for moose, salmon, sea trout, and brook trout is Sheet Harbour, which is reached by a steamer from Halifax or by a 28-mile drive from Upper Musquodoboit, a point on the Canadian National railway. Another good centre for bear, moose, deer and trout is Kejimkujik (or Fairy) lake. Here are the headquarters of the Rod and Gun Club, with club house, log cabins and cottages for sportsmen and tourists.

Licences to hunt moose are issued for all counties except Cape Breton and Richmond. Amherst, Caledonia, Halifax, Guysboro, New Glasgow and Truro are all rendezvous within easy reach of mooseland. In 1929, 1,066 moose were reported as killed, and 1,316 deer.

An interesting study by the chief forester of the moose in Nova Scotia, its numbers and habits, and of legislation affecting it may be found in the Report of the Minister of Lands and Forests for 1927, pp. 54-62.

NOVA SCOTIA PROVINCIAL GAME LAWS (ABSTRACT)

Big Game.—No cow-moose or female deer to be hunted at any time nor any moose or deer under 2 years of age, nor any moose on Cape Breton island.

Open season for bull moose and male deer, Oct. 16 to Nov. 15.

No moose may be hunted between one hour after sunset and one hour before sunrise, or with dogs, or with aid of lights.

Affidavit of kill to be made within 8 days before a justice or warden. A licence holder may kill or assist in killing only one moose during the season.

No caribou to be hunted at any time.

Bear, wild-cat, and wolf, are not protected.

Birds.—Pheasant, spruce and Hungarian partridge and all non-game birds (except crow, hawk, great owl, kingfisher and English sparrow) protected at all times. No person shall kill any ruffed grouse between Nov. 1 and Oct. 15, in the following year. The bag limit for grouse is 5 in one day.

Licences.—To be obtained from Department of Lands and Forests, Halifax, or from forest rangers.

No licence issued to any person under the age of 18.

Non-residents licence for all game, \$50.

Non-residents licence for small game, \$15.

Residents licence for big game, \$2.

No non-resident may hunt in Nova Scotia except accompanied by a licensed guide in any forest or place frequented by game, but permits are issued for camping and fishing in such parts.

THE MIGRATORY BIRDS CONVENTION ACT, 1917

This Act is designed to preserve insectivorous birds in the interest of agriculture, and wild fowl in the interest of food supply and health-giving sport.

The yearly damage to crops in Canada by the pests which are birds' natural food has been estimated at many million dollars. The great auk, the passenger pigeon and the Labrador duck are already extinct, but the Act may save other birds nearing extermination.

The bird sanctuary in the province of Nova Scotia is "Seal island," comprising "Seal," "Flat," "Round," "Mud" and "Noddy" islands in the county of Yarmouth.

SUMMARY OF THE ACT

Birds Protected Continuously Throughout the Year—

- (a) All migratory insectivorous birds, viz.: bobolinks, catbirds, chickadees, cuckoos, flickers, flycatchers, grosbeaks, hummingbirds, kinglets, martins, meadowlarks, nighthawks or bull-bats, nut-hatches, orioles, robins, shrikes, swallows, swifts, tanagers, titmice, thrushes, vireos, warblers, waxwings, whip-poor-wills, woodpeckers, and wrens and all other perching birds which feed entirely or chiefly on insects.
- (b) All migratory non-game birds, viz.: auks, auklets, bitterns, fulmars, gannets, grebes, guillemots, gulls, herons, jaegers, loons, murre, petrels, puffins, shearwaters and terns.

- (c) Shorebirds or waders: avocets, curlew, dowitchers, godwits, knots, oyster-catchers, phalaropes, plovers, sandpipers, snipe, stilts, surf birds, turnstones, willet and yellowlegs. (Note—Woodcock, Wilson's or Jack snipe may be shot in Nova Scotia from October 1 to November 30.)
- (d) Band-tailed pigeons, little brown sandhill and whooping cranes, swans and curlew.
- (e) Wood duck.

Migratory Game Birds Protected Except in an Open Season—

Open season in Nova Scotia for geese and brant, October 1 to January 15, but in Shelburne, Halifax and Queen's counties to any person holding a licence from the minister, December 1 to February 14.

Open season in Nova Scotia for wild ducks including eider or sea duck, and rails, October 1 to January 15, but in Cumberland county, September 15 to December 31.

Bag limit in any day is for ducks 25, geese 15, brant 15, rail 25, snipe 25, woodcock 8 (125 in the season).

In Nova Scotia migratory game birds killed during the open season may be possessed for one month after the close of the open season, except that in Shelburne, Queens and Halifax counties geese may be possessed to the last day of the February following.

The killing, hunting, taking, injuring or molesting of migratory game, migratory non-game or migratory insectivorous birds, or their nests or eggs, or parts thereof, is prohibited throughout the year. Permits may be issued by the Minister of the Interior to kill protected birds if proved to be doing serious injury to agricultural or other interests, and also for scientific or propagation purposes.

Indians and Eskimos may take at any season the following migratory non-game birds: auks, auklets, guillemots, murres and puffins and their eggs for human food and their skins for clothing, but these birds so taken shall not be sold or offered for sale or otherwise traded.

For the further protection of bird life there are certain shooting restrictions. It is forbidden for any person to sell,

expose for sale, buy, trade or traffic in any migratory game bird killed or taken during the open season.

Penalty.—For violation of Act or Regulations based thereon fine of from \$10 to \$300 besides costs or imprisonment, and confiscation of guns, boats and appliances.

Eider-down.—The minister, or any person duly authorized by him, may issue permits allowing persons owning or leasing eider duck breeding areas to collect, possess, transport and sell eider-down.



Nova Scotia Bull Moose

Taxidermists must secure a licence (fee \$1) and keep a correct record of all protected birds received, giving date and locality of capture and the name and address of the owner of such bird.

The enforcement of the Migratory Birds Regulations is in charge of a full-time staff, under R. W. Tufts, Wolfville, N.S., Chief Migratory Bird Officer of the Maritime Provinces, who will be pleased to furnish any further information desired.

GAME SANCTUARIES

Within the last three years the provincial Government has set aside two beautiful tracts for game sanctuaries.

Tobeatik park is the meeting point of the four most western counties; it is bounded on the east by Rossignol and other lakes, and lies on the headwaters of five rivers flowing south and west.

Liscomb park lies on the boundary line of Halifax and Guysboro counties, east of East river and Governor lake and west of Liscomb lake and Liscomb river. Its southern part is on the watershed of Moser, Quoddy and Salmon rivers.

Both parks are gay with rapids and falls and contain fine stands of timber. Beaver are plentiful in Tobeatik and are being restocked in Liscomb. Log cabins are provided for game wardens who protect the wild life and ease the meanderings of the canoeist by having portages opened up and the stream cleared of troublesome debris.

SUMMER VISITORS AND TOURISTS

In 1929, 191,714 tourists and 25,279 touring cars entered Nova Scotia during the regular tourist season, June 1 to September 30. In 1928, the respective figures were 165,906 and 23,125. Of the cars in 1929, 10,265 were from the United States; in 1928, 8,318. The value of the tourist industry to Nova Scotia for 1929 was estimated at \$17,000,000.

Steamers from Boston to Yarmouth (B. & Y. Line) or from New York to Halifax (Furness Cross Line), or from New York to Yarmouth, or Boston to St. John, by the Eastern Steamship Company line, and from St. John to Digby by the daily Canadian Pacific boat, through-sleepers on trains between Boston and Halifax and on the two trans-Canada trunk lines—all these existing transport services, stimulated by competition and by the surely-impending rivalry of aircraft, bring an evergrowing summer population to this new Scotland, where, in parts, Gaelic is a second language, where such names as Loch Lomond or the Craignish hills are echoes from across the Tweed, and where beside the "primrose path of dalliance" there is mickle "Caledonia stern and wild, meet nurse for a poetic child."

The Royal Nova Scotia Yacht Club at Halifax and the Royal Cape Breton at Sydney are well known to yachtsmen, as are also the yacht builders at Dartmouth, Port Hawkesbury, Shelburne and Lahave. The Bras d'Or lake and the Little Bras d'Or lake, fiords or arms of the sea, entered by narrow channels, are the places of all places for sailing and motor-boats.



Bras d'Or Lake at Baddeck

The "Green Acadian mountains with sylvan rivers among them" have, thanks to the New England poet, been so widely advertised as the "Land of Evangeline" that the story of the little French maid has drawn and still draws a main stream of tourist travel to the Annapolis valley. But now in addition to the lines of railway detailed on another page, so many new roads have been opened and so many old ones improved that the "gypsy car" style of travel along highways and byways in all parts of the province is in favour.

Taking Halifax, Yarmouth and Digby as starting points in the south-western part of the peninsula, pleasant summer resorts are dotted along the railroads and motor

roads that encircle it, and within easy access of others that cross from the Atlantic to the bay of Fundy are lakes strung together by streams that offer all that canoeist or angler can ask. On the Atlantic coast lie the well known resorts of Hubbard and St. Margaret's bay, Chester with its Hackmatack inn, Mahone bay, Lunenburg, Bridgewater, Liverpool and Shelburne, and the picturesque coast between Pubnico and Yarmouth. On the bay of Fundy side is Weymouth, facing which is Digby neck, broken by the Petit Passage; on the Annapolis basin are Digby, Deep Brook and Annapolis Royal, the first permanent settlement of Europeans in Canada; on the basin of Minas, Wolfville and Grand Pré:—names well known to visitors as refuges from the heat of big eastern cities in the United States.

The less known scenic coast east of Halifax is opened up by a coast road which crosses Sheet Harbour and turns north over the St. Mary river on its way to Antigonish and Port Mulgrave Ferry.

The island of Cape Breton has remarkable points of beauty and interest. In the Bras d'Or lake district are Baddeck, Whycocomagh, Grand Narrows and the lake road from St. Peter's to Sydney. Wave action has cliffed the headlands and other exposed stretches of shore on the lakes, revealing snow-white masses of gypsum, red shales, and buff limestones, which, with the ever changing blue of sky and water and the varied tint of green on the hill sides, makes the Bras d'Or country peculiarly beautiful. The depth of these inland lakes is extraordinary. A trip from Sydney to Louisburg, varied maybe by the pretty trip up Mira river from Mira gut, passes through the famous coal field of Cape Breton to the ruins of what was once the most powerful fortress on the western hemisphere. In the northern counties of the island on the road from Whycocomagh to Cheticamp are the fine fishing regions of lake Ainslie and the Margarees, and whether by sea or highroad, it is not more than a day's pleasure run to cover the distance from Sydney by Ingonish to the wild grandeur of cape North.

"As the boat passes cape Egmont, another long straight escarpment meets the view coming out to the shore between Aspy bay and extending along the coast to Money point near cape North. *This is perhaps the most*

magnificent view in Nova Scotia. The great 1,200 foot escarpment is slashed by many deep torrent valleys. Between them in two or three places, peaked mountains known as 'sugar loaves' rise to the level of the plateau like huge pyramids standing in line. These bold summits are said to be the first sighted by Sir John Cabot. From the shore of the 'North pond' of Aspy bay, it is a moderate



Whycocomagh and Skye Mountain

climb to the top of the Sugar Loaf mountain, and one well worth the effort."¹

*Rocking stones, boulders and drumlins.*²—The great Rocking Stone of Spryfield near Halifax is a wonderful example, perhaps the largest in the world, of a "perched boulder" left by the ice sheet and so delicately poised that it can be rocked by a man using a pole as a lever. The weight is nearly 500 tons. A few hundred yards away is "Table Rock"—remarkable because this huge boulder

¹ Goldthwait, J. W., Geol. Survey, Memoir 140, p. 36.

² Goldthwait, J. W., Geol. Survey, Memoir 140, pp. 88, 92, 155.

rests on 3 smaller ones of which one is a grey quartzite foreign to the native granite of the other two.

Other large glacial boulders are Sentinel Rock and Thrumcap Rock in Yarmouth harbour. Among the mass of boulders between Kejimkujik (Fairy lake) and Pes-cawess lake which lies east of Rossignol lake, are one 35 feet high and another 1,050 tons in weight.

Drumlins are oval or elliptical hills, locally named "whalebacks," of plastic boulder clay fashioned by the



Chester Bay and Drumlins

moving ice-sheet. Citadel Hill at Halifax is a drumlin. "The wide spacing of drumlins around Chester bay allows their beauty to be fully seen. The deep water in which they lie makes ideal conditions for sailing and boating." Where slate beds occur along the coast of Yarmouth county, drumlins are conspicuous.

Submerged Forests.—"The most widely known submerged forest in Canada and in many respects the most remarkable is at old Fort St. Lawrence, 3 miles northwest of Amherst. The stumps (pine and beech) are rooted in

stratified deposits of the Champlain stage of post glacial marine deposits. It lies 30 feet below high tide mark, and the largest pine stump is 2' 6" in diameter with 200 rings of growth."

The Grand Pré marshes also cover another forest primeval, and drowned stumps or forests are also found at Yarmouth, Cape Sable island, Lunenburg, Halifax and Guysborough.

It must be concluded either that the land around the bay of Fundy has sunk or the Atlantic ocean has risen at least 15 feet and perhaps 35 owing probably to the melting of the ice of the glacial period, and so recently that the wood is still very well preserved.

HISTORIC SITES¹

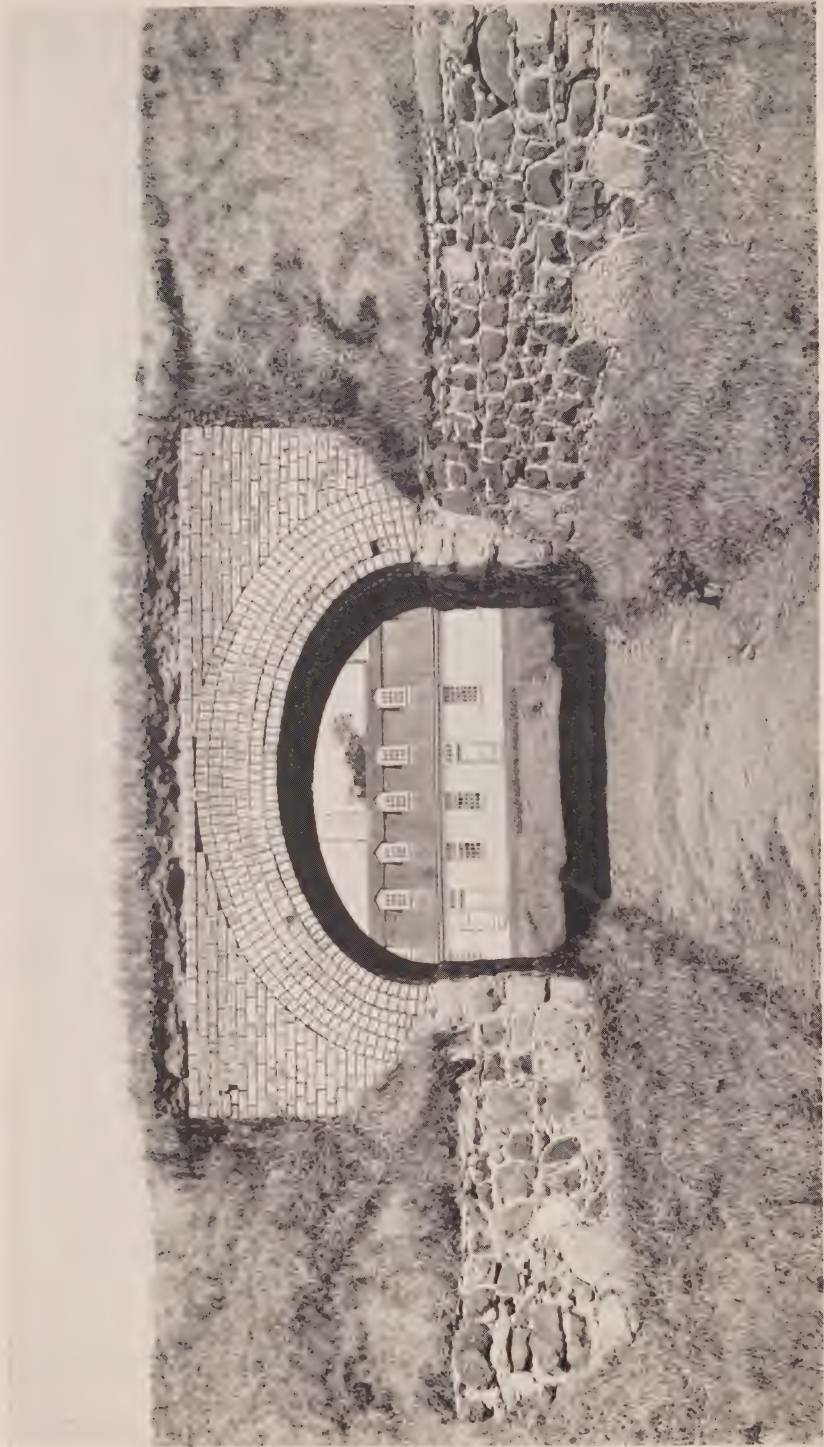
The National Parks Branch of the Department of the Interior, on the recommendation of the Historic Sites and Monuments Board of Canada, is actively engaged in the work of preserving and marking historic sites or structures of outstanding national importance, with a view to the protection of these for all time and the infusion in future generations of an imagination which inspires patriotism. Steps are also being taken to perpetuate the memory of a number of outstanding personages who played an important part in the early history of the Dominion.

A standard in the form of a cairn, boulder or other monument is erected to carry the department's bronze tablet bearing the historic data pertaining to the site or event being commemorated, where there is no building or other structure to which it can be affixed.

Very favourable progress has been made along these lines in Nova Scotia, as will be noted from the following sites and events already commemorated and important personages whose services have been perpetuated.

Fort Anne, Annapolis Royal, N.S.—One of the most notable sites on the North American continent, the history of which dates back to 1604, when de Monts, Champlain and kindred brave spirits were sent out from France to found a colony in the New World. Of the original fort only

¹Contributed by the Director of the National Parks Branch, Department of the Interior.



Fort Anne; the Old French Gate Showing Officers' Quarters

traces now remain, but the officers' quarters building, as well as the first magazine erected in 1702, are still in a fair state of preservation. Many of the original features have been restored and the park is one of the most interesting in the east, it and its museum being visited annually by thousands of tourists.

Louisburg, Cape Breton.—Here are the ruins of a French fort erected from 1720-40 at a cost of about six million dollars and once proudly called the "Dunkirk of America." The fortress sustained two sieges, the first in 1745 and the second in 1758. Its final capture by the British was the first of a series of events which culminated in the giving of Canada to the British Crown. Shortly after its capture, on 26th July, 1758, the fortress and all the harbour defences, with the exception of the bomb-proofs were levelled to the ground by orders from the British Government. An area of 328 acres comprising the original site has been acquired, two tablets placed on the lighthouse, on the east side of the harbour and cairns and tablets erected on the sites of King's and Dauphin Bastions respectively.

Fort Edward at Windsor.—Formerly old French Fort Piziquid, which came into possession of the British soon after their establishment of power at Halifax in 1749, and was used by them for many years for defensive purposes against the Indians, French and Americans. It was closely associated with the tragic incidents of the deportation of the Acadians in 1755. An area of 27 acres has been acquired on which is situated the original blockhouse intact. A cairn and tablet have been erected on the site of the old officers quarters building.

King's College, Windsor.—The oldest university in the King's Overseas Dominions, from whose halls have gone forth many distinguished men, leaders in church and state. It was founded in 1789 by the Right Reverend Charles Inglis, first Bishop of Nova Scotia and other United Empire Loyalists. The college was granted a Royal charter by King George III in 1802. A tablet has been affixed to the outer wall of the Hensley Memorial Chapter building.

Fort Lawrence near Amherst.—Erected in 1750 by Major Charles Lawrence, afterwards Lieutenant Governor

of Nova Scotia, for the defence of the isthmus of Chignecto and which proved an important factor in the struggles between the English and French in the eighteenth century. The fort has been demolished and only vague traces of the original trenches now remain. A cairn and tablet have been erected on the original site.

Champlain's Habitation, Lower Granville.—Site of first fort or habitation of Port Royal, built by the French under de Monts and Champlain, 1605. It was attacked and partially destroyed by a British force from Virginia in 1613, restored and occupied by Scottish colonists in 1629 and laid waste on their retirement from the country in 1632. This is the recognized birthplace of Canadian literature and drama. A cairn and tablet have been erected adjacent to the road leading from Victoria Beach to Granville Ferry.

Samuel Vetch, Annapolis Royal.—A cut stone monument and tablet have been erected on the Fort Anne grounds to commemorate the public services of Samuel Vetch, who was Adjutant-General of the force under Colonel Francis Nicholson which captured Port Royal, capital of Acadia in 1710. As first governor and commander-in-chief, he was an able administrator and with Imperial vision strove to extend the realm of Britain beyond the seas.

Shelburne.—A large boulder and tablet have been erected at the intersection of King and Bay streets, facing the harbour, commemorating it as the Loyalist Town of Nova Scotia, which was settled in the years following the close of the American Revolution by men and women determined to remain under the flag and rule of Great Britain rather than become citizens of the United States. The first fleet with settlers arrived in the harbour, which was then known as Port Roseway, on 4th May, 1783, and the town was laid out in the same year.

Sydney (Joseph Frederick Wallet Des Barres).—A tablet has been affixed to the Post Office building in recognition of the public services of Joseph Frederick Wallet des Barres who served with distinction as a military engineer in the mid-eighteenth century wars in America. He was afterwards employed by the British Government to survey and chart the eastern coast of North America and

gained great fame as an oceanographer. He was also the first Lieutenant-Governor of Cape Breton, 1784-87, and the founder of Sydney.

Canso.—A cairn and tablet have been erected on the public school grounds to commemorate the early events associated with the present town, which was first developed as an important fishing station by the French in the sixteenth century. It was fortified by the British in 1720 and later was the scene of several combats between them and the French and Indians.



Louisburg Fort, Remnant of

Admiral d'Anville's Encampment, Bedford Basin.—A cairn and tablet have been erected near Fairview station, a few miles north of Halifax, to mark the place where the ill-fated expedition under Duc d'Anville, sent from France to recover Acadia, encamped during the autumn of 1746. While at Chebucto d'Anville died and many of his men fell victims of fever. Owing to storms and disease the enterprise utterly failed.

Fort la Have, La Have.—Built by Isaac de Razilly in 1632, after his appointment as Lieutenant-Governor of Acadia and at which point he established the capital of the

colony. It was also an important fishing station of Nicholas Denys, whose enemy Le Borgne destroyed it in 1653. The British captured the fort in 1654 and again in 1690. A cairn and tablet have been erected on the lighthouse reserve.

Battle of the Shannon and Chesapeake, Halifax.—A cut stone monument and tablet have been erected on the Admiralty Grounds in honour of Captain Philip B. V. Broke, officers and crew of H.M.S. Shannon, who gained a glorious victory over the United States frigate Chesapeake off Boston Harbour, 1st June, 1813. The Shannon brought her prize into Halifax Harbour on 6th June.

First Post Office in British North America, Halifax.—A tablet has been affixed to the Post Office building to commemorate the establishment in 1755, of the first post office in the Dominion of Canada as now constituted.

First Printing Press, Halifax.—A tablet has been erected in the lobby of the Province house to commemorate the establishment, in 1751, by Bartholomew Green, Jr., of the first printing press in what is now British North America. On it was printed on 23rd March, 1752, Canada's first newspaper, "The Halifax Gazette," later known as "The Nova Scotia Royal Gazette," and which has been regularly issued since that date.

Place names now obsolete are often of interest but likely to be forgotten:—

Amherst (1760)—La Butte, Fort St. Lawrence, Beauséjour.

Annapolis Royal—Port Royal (1604).

Bay of Fundy—Grand Baie.

Cape Breton Island—Bacculau, Isle Royal (1712), Isle St. Lawrence.

Louisbourg (1713)—Havre L'Anglois, Port à l'Anglois.

Lunenburg (1753)—Merlinguish.

Sable Island—Santa Cruz; Isola del Arena.

Shelburne—Port Razoir, New Jerusalem (1775).

Sydney (1783)—Port Espagnol.

Windsor (1764)—Piziquid (1760).

Wolf(e)ville (1829)—Mud Creek (1760).

ADDRESSES FOR SPECIAL INFORMATION ABOUT NOVA SCOTIA

Agent General for Nova Scotia.—2 Cockspur St., London, S.W. 1., Miss Jean Iris Howard.

Agriculture.—Prof. J. M. Trueman, Secretary for Agriculture and Principal, Agricultural College, Truro. Nappan and Kentville Dominion Experimental Farms, Superintendents.

Dairying.—W. J. Bird, Provincial Dairy Superintendent, Truro.

Forests and Game.—Otto Schierbeck, Chief Forester, Halifax.

Fruit Farming.—W. A. Middleton, Provincial Horticulturist, Truro.

Minerals.—Norman MacKenzie, Deputy Minister of Mines, Halifax.

Natural Resources.—Lt.-Col. Innes, Deputy Minister, A. E. Flynn, Development Engineer, Halifax.

Poultry.—J. P. Landry, Provincial Poultry Husbandman, Halifax.

Technical Education.—F. H. Sexton, Halifax.

Trade Enquires.—

Secretary, Board of Trade, Halifax, E. A. Saunders.

Department of Trade and Commerce, Ottawa.

Canadian Trade Commissioners—

Harrison Watson, Canadian Building, Trafalgar Square, London, S.W. 1.

J. Forsyth Smith (Fruit), Walter House, Bedford St., London, W.C. 2.

H. A. Scott, 31 N. John St., Liverpool.

Douglas S. Cole, Clare St., Bristol.

Gordon B. Johnson, 200 St. Vincent St., Glasgow.

Frederic Hudd, 44 Whitehall St., New York City.

Water Powers.—Nova Scotia Power Commission, Secretary, A. T. Croft.

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